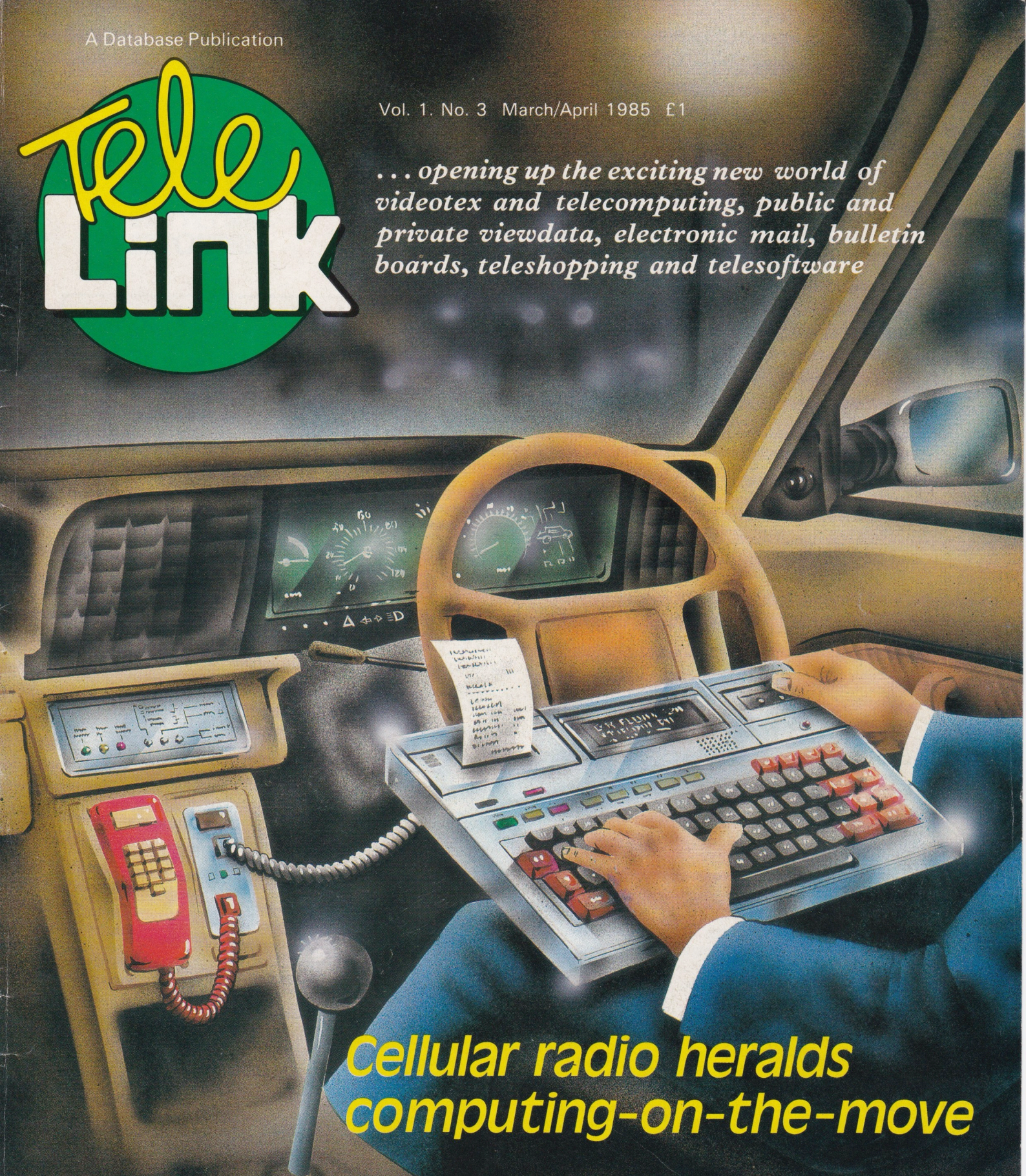
A Database Publication

Tele Link

Vol. 1. No. 3 March/April 1985 £1

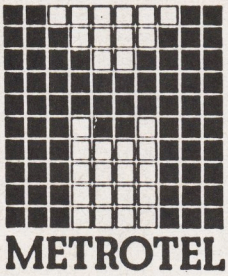
. . . opening up the exciting new world of videotex and telecomputing, public and private viewdata, electronic mail, bulletin boards, teleshopping and telesoftware



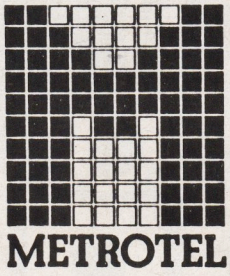
Cellular radio heralds computing-on-the-move

Logging on in Wogga Wogga
Telesoftware goes to school
Photo Videotex is (almost) here
Telebanking: the big breakthrough
How the hi-tech criminals operate
Switching on to community videotext

INSIDE
39 bulletin boards listed in 16-page supplement



VIEWDATA SOFTWARE



PC-PRESTEL
TERMINAL EMULATION SOFTWARE FOR YOUR IBM PC

PC-PRESTEL software merges the capabilities of your IBM PC with telecommunications to provide a software solution for receiving Prestel-based videotex.

With PC-PRESTEL, you can receive full colour Prestel through a Prestel modem and display it using a Plantronics colour display card.

PC-PRESTEL reduces complicated sign-on and setup procedures to single step commands.

Simply enter the initial communications setup with the unique Setup Screen and PC-PRESTEL assures instant sign-on each and every use.

HERE'S WHAT PC-PRESTEL BRINGS TO YOUR PC

* Complete software emulation of the Prestel protocol
* Compatibility with any standard Prestel system
* Automatic or manual Sign-on options
* Auto dialing with suitable modems
* Print screen function enables text and graphics page printing on an EPSON MX-80 compatible printer
* Communication in the following modem speeds:
  - 1200 baud (BELL 212A)
  - 300 baud (BELL 103)
  - 1200/75 (CC ITT V.23)

Price: £199 + VAT

PC-DISPLAY
A COMPLETE PRESTEL HOST SYSTEM FOR THE IBM PC

METROTEL introduces PC-DISPLAY, a complete Prestel videotex system for 1 to 3 users operating on the IBM PC. Now, display Prestel pages in both an interactive mode using standard Prestel commands, or a rolling display mode for unattended display demonstrations. Using PC-EDITOR, you can create and maintain your own database of Prestel pages, and then with PC-DISPLAY, your IBM PC can serve as a host to display your pages. With a single IBM PC, you can now create and display your own Prestel videotex database without the expense of a large mainframe computer.

SIMPLE TO SETUP AND EASY TO USE

With PC-DISPLAY, your IBM PC can offer full colour Prestel with the following features:

* Up to 300 Prestel pages on floppy disc or 9,000 pages on the 10MB PC XT can be stored and then retrieved by 1 to 3 users.
* Any page can be selected and displayed by keying a page number.
* Two remote terminals can be connected – either dial-in with a modem or directly connected with a standard cable.
* All standard Prestel commands like *0 and * are supported.
* Continuous scrolling of pages is available in the rolling display mode.
* Any menu structure can be included into the page design enabling a custom designed Public Access Terminal application.

Price: £399 + VAT

PC-EDITOR
PRESTEL PAGE CREATION FOR YOUR IBM PC

Finally, a software solution is available for Prestel Page Creation using the IBM PC. PC-EDITOR is a software diskette, together with a Plantronics ColorPlus Board, that will enable the PC to create and edit Prestel videotex pages, with all standard functions such as:

* Foreground characters in seven basic colours
* Backgrounds in eight colours
* Double height characters
* Separated and contiguous graphics
* Flashing characters

POWERFUL EDITING FEATURES

In addition to the standard Prestel editor features, PC-EDITOR provides the Prestel Page Editor many advanced, time-saving features including:

* Single stroke Function key editing providing fast and efficient page creation.
* Off line editing, saving long distance line costs.
* Page upload and download capability for transmission to distant host systems.
* Print page function enabling text and graphics screen printing.
* Standard templates can be stored on the PC disk to save page creation time.

Price: £450 + VAT
(excludes Colour Board)

SKYESOFT-VTS
VIEWDATA TRAINING SYSTEM

THE SKYESOFT-VTS is a cassette based local viewdata system for the BBC Microcomputer and may be used for demonstration and training purposes. It was developed originally to help in market research for a local viewdata service for the Isle of Skye and as such was used extensively by the general public at open evenings held around the island. It is an accurate representation of the subscriber's view of PRESTEL and has helped in the training of new users without incurring telephone and access time charges.

The VTS comprises two main elements, the Viewdata Simulation and a Frame Editor. The first of these also incorporates a Loader.

All the programs are written in BASIC so that the user can tailor them to his or her own requirements.

Price: £24.50 + VAT

PrEDITor

PrEDITor is an invaluable piece of software for the BBC Model B, enabling viewing, editing and saving of viewdata frames.

- on-line to Prestel, or any other similar national or private viewdatabase.
- on-line to databases other than viewdata, converting information accessed into viewdata frames.
- off-line, using your micro as your own private viewdatabase, or with a view to transferring locally edited frames to a remote viewdatabase.

Pages held in core (up to twenty), can have page links added – so that menus etc will actually work, and may also be viewed sequentially either by manual prompting or by an automatic pages. This latter feature is ideal for unmanned demonstrations, exhibitions etc.

PrEDITor is tape or disc based permitting the storage of pages (with their links) on either. But tape version must be requested with order, Disc version cannot be copied to tape.

Price: £95 + VAT

METROTEL IPT
PROFESSIONAL EDITING SYSTEM

METROTEL-IPT is probably the world's leading intelligent viewdata editing system. In use by many of the major PRESTEL Information Providers, the system includes all the features you need to produce and maintain a sophisticated viewdata database. In addition to a host of on-screen editing features IPT includes management facilities to allow route checking, reverse indexing, and many other features. IPT supports interactive bulk-update protocols and runs on TORCH, IBM PC, WREN and many other microcomputers. Recent additions to the facilities include automatic message retrieval and sorting, and automatic page creation. If you are editing a large number of viewdata pages then IPT is a must.

Price: £1,950 + VAT

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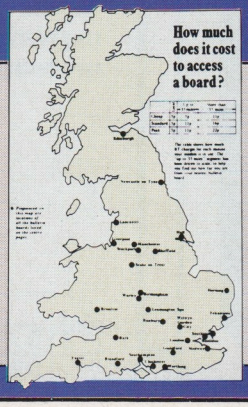
● Our special offer of 12 issues of TeleLink for the price of 10.



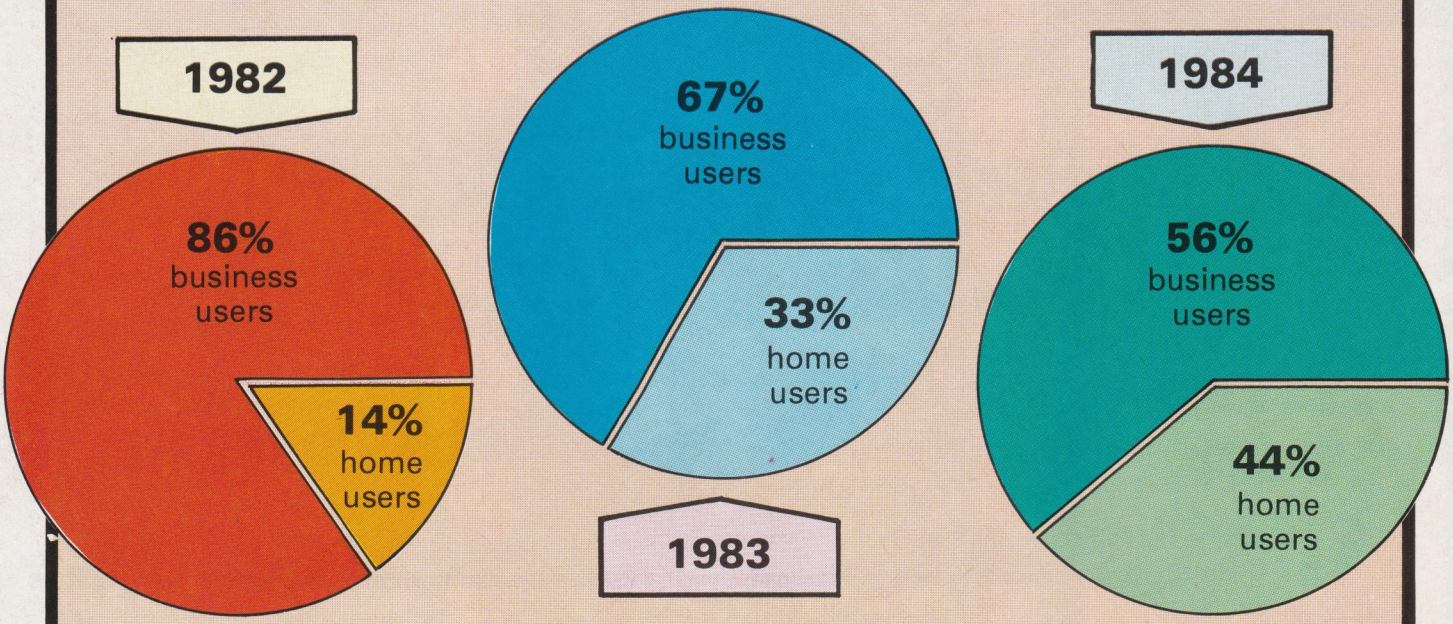
PULL-OUT

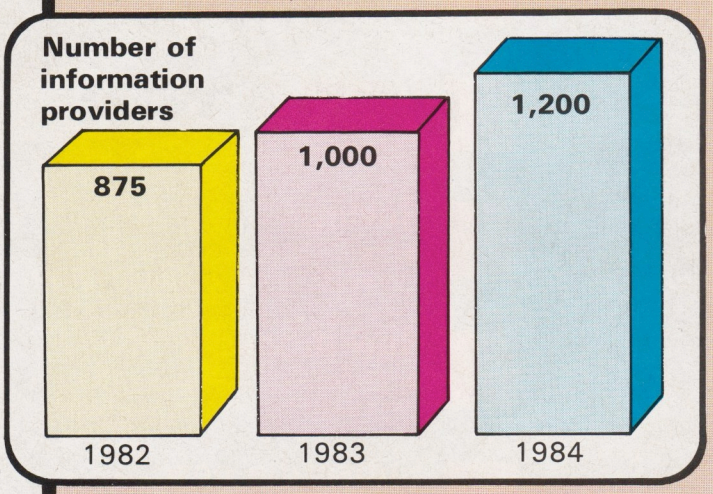
Our exclusive Guide to Bulletin Boards in the UK includes a map pin-pointing 39 boards that are now in action

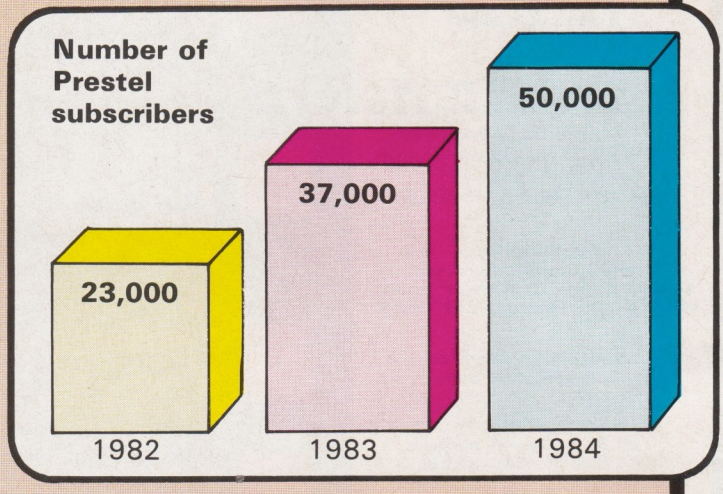
See centre pages

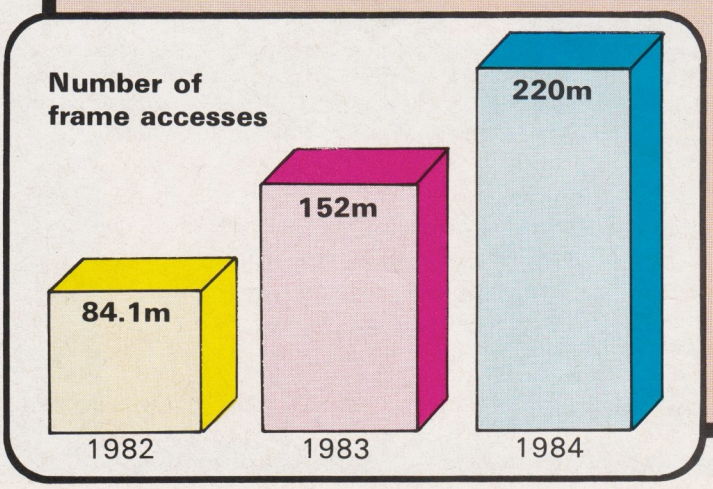
Prestel in figures

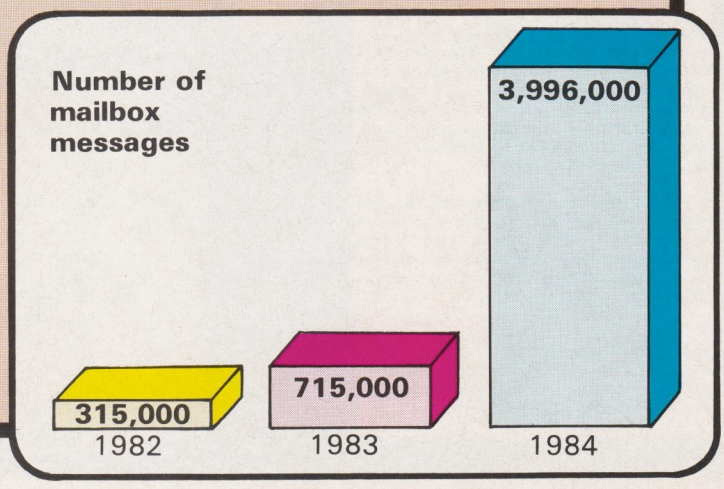
Proportion of terminals able to access Prestel











To TeleLink – a son

TELELINK has been asked by the Department of Trade and Industry to take over publication of the world's oldest newsletter devoted to teletext and viewdata.

Called Talk Teletext and Viewdata, it was launched by the DTI's Information Technology Division in May, 1981, as part of a campaign to promote teletext generically.

In 1983, responding to the growing importance of viewdata as a business and residential service, the journal was expanded to cover events in the viewdata industry, and its circulation increased accordingly. Its growing number of readers includes major viewdata companies and consultants, as well as small independent dealers throughout Britain.

Recently the DTI decided that, having created an initial impetus and evoked serious interest among the various sectors of industry who were connected with teletext and viewdata, the time had come to pass responsibility for its publication on to the private sector.

This decision coincided with the launch of *TeleLink*, and after discussions with a number of other publishers the Department asked the proprietors of *TeleLink*, Database Publications, to take over the publication of Talk Teletext and Viewdata.

Mr Derek Meakin, Joint Managing Director of Database and Managing Editor of *TeleLink*, said: "We are delighted that the DTI should show its confidence in the future of *TeleLink* by asking us to take on this additional responsibility.

"Talk Teletext and Viewdata has done a tremendous amount of pioneering work in promoting new concepts in communications among manufacturers, dealers and the general public. It has had a great success story to relate. Both teletext and viewdata are now well established in Britain, and thanks to the determination of British exporters they are also taking root in many other parts of the world.

"We are giving the publication a new look, and it will be appearing regularly as a supplement to *TeleLink*, thus giving it a much wider distribution both in Britain and overseas".

The first new-style issue will be published as a supplement to the next issue of *TeleLink*. Companies in the teletext and viewdata industries who would like news of their products to appear in its pages should write now to: The Editor, *TeleLink*, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

MEPs to go on line?

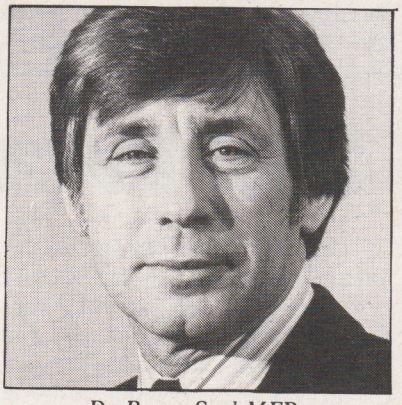
THE European Parliament is soon to go on line, with each MEP's constituency office linked to Brussels by home computer and modem.

At least that is the prediction of a Yorkshire Labour member who has launched a campaign to drag his socialist colleagues – "kicking and screaming if necessary" – to the forefront of the telecommunications revolution.

Dr Barry Seal, MEP for West Yorkshire, is seeking to convince all 32 members of the British European Labour Group that this will allow them to steal a march on their political rivals.

"After all, it's only a matter of time before all MEPs adopt the new technology", Dr Seal, a computer expert, told *TeleLink*. "It simply has to come in order to streamline communications between Brussels and the far flung constituency offices. For the present system, which relies heavily on ordinary mail, is so slow as to be pathetic".

Dr Seal is the first to admit that he has a secondary – and for him, just as important – motive behind his campaign. This is that he wants to promote on line equipment made in his own constituency as part of a long term plan to see West Yorkshire turned into a new "Silicon Valley".



Dr Barry Seal MEP

"We already have two of the market leaders – Pace Software and Microvitec – both in Bradford.

"Now I am convinced that we could attract many more firms like this to West Yorkshire.

"So we could take our place at the forefront of yet another revolution – this time in the field of communications. For it is going to affect all our lives from here on in".

MICRONET UPDATES

MICRONET has made it easier for subscribers to find their way around its 30,000 frames. "A user survey told us the kind of people joining today don't enjoy digging around inside Micronet like our earliest members did two years ago", said editor David Babsky.

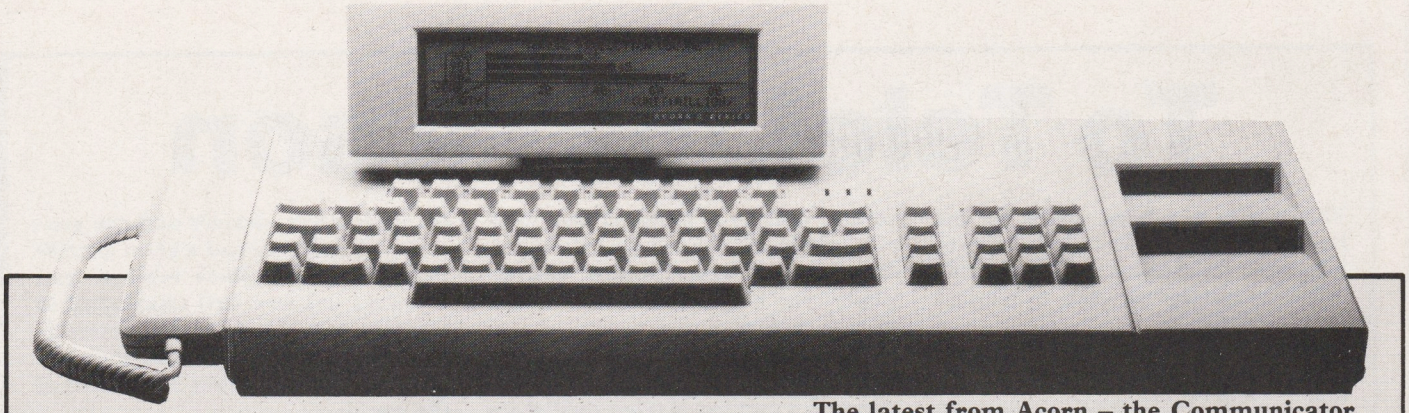
"They want pleasure and straightforward fun without having to hunt through the system to find it, so we've made improvements to our three main indexes".

The Fast Guide, page ***60000**, now has fewer items in each section so users can make their choice even more quickly.

The A to Z Index, page ***60003**, now includes home-based information providers like Starlight SF and InfoBeeb.

What's New is available on page ***800** and the faster ***80002** and has been given a page redesign.

In addition a new series called Inner Secrets on page ***8000020** will explain how each part of a micro works.



The latest from Acorn – the Communicator

Curry strikes back

ACORN has been going through a traumatic period that should only happen in nightmares, first being mercilessly gunned by The Sunday Times with a spate of incorrect facts about the company's performance and then seeing the shares plummet as well-heeled Sunday Times readers hurriedly phoned their stockbrokers.

Ever-resilient Chris Curry, who saw his own personal paper fortune rapidly evaporating in the stampede, chose this moment to unveil his company's most dramatic excursion yet into the world of communications. It's a remarkable machine that combines a micro, a telephone, a modem and lots more into one single unit.

The newcomer is called, quite simply, the Communicator. Curry's description of it is "the ultimate in modern communications technology". And he could well be right.

For in one compact desktop unit is a 16 bit 160k micro, an auto-answer auto-dial modem, a telephone and answering machine which is fully functionable even when the power is off, and a dictating machine using standard microcassettes.

A businessman can use it as a diary, address book, clock, calculator and telex machine. Not to mention conventional computer applications such as spreadsheet and word processing. With the multi-standard modem he can communicate with the world. There is even optional software to provide terminal emulation for a DEC VT100.

Price of this miracle machine has not yet been announced, but it is expected to be not much more than £500.

Farmlink to go national

FARMLINK, the farm management and advisory service on Prestel ***801,*** is to go national later this year. At present localised information is only available to farmers in an area south west of a line from Gloucestershire to the Isle of Wight.

This hasn't stopped more than 100 farmers in other parts of the country subscribing to the service, however, for the general agricultural information and advice available.

At the start of this year, nine months after the south west became the trial area for Farmlink, there were 700 subscribers in this "10 per cent representative area of the UK".

Farmlink officials say they are satisfied with the growth of the service.

A spokesman guardedly said the national roll-out would happen "sooner rather than later", though *TeleLink* understands October is a likely date.

Software support

TELEPHONE support for both computer software and hardware is not a new thing by any means. But automatic support of software packages using a mailbox facility such as Telecom Gold certainly is and it is being pioneered by a Maidstone based firm, System C.

The company markets an applications generator called Sycero for the IBM PC and compatibles as well as the ACT Apricot.

The problems of supporting a large, geographically spread user base prompted the firm to experiment with Telecom Gold to pick up queries on the package, as well as to broadcast updates and tips on the use of Sycero.

As part of the maintenance agreement Sycero users get a modem and a subscription to Telecom Gold. If a fault is found in the package, or even if the user just has a query on how to use the program, a message can be left in System C's mailbox.

The firm guarantees a reply within half a day during the working week – messages being collected first thing in the morning and after lunch. If the problem turns out to be more serious than can be dealt with over the network then a phone call, or in extreme cases a visit to the user, can follow.

But the firm reckons that most queries can be sorted out fairly easily and simply with a reply to the user's Telecom Gold mailbox.

Marcus Bolton of System C describes the system as the beginning of a much more comprehensive automated fault finding system. IBM, for example, has a large database of known faults in its mainframe operating systems which is accessible to its software engineers on line. Bolton wants to take this a step further and open the System C database up to the user himself in the long term.

"We know the idea is feasible and we are working on setting it up as soon as possible", Bolton commented. "What

Opportunities for building societies

THE Government's Green Paper on the insurance industry will clear the way for change and create opportunities for building societies to move into new areas of business, says Vic Shiner, manager of Datasolve's videotex services.

He told a seminar on the impact of viewdata on building societies: "It is therefore essential that building societies are well placed to take full advantage of these opportunities".

The seminar heard reports on how viewdata pilot schemes involving insurance companies and building societies have succeeded in the area of instant quotations.

Many strategic decisions have been taken by insurance companies and building societies to expand the use of viewdata on a massive scale.

This year it is likely that several thousand viewdata terminals will be installed by building societies, and insurance companies – via the various networks – will be providing local dial points from nearly every part of the country.

It is likely that the availability and quality of the viewdata systems available to building societies will be as important to the insurer's market share as the policies themselves, the seminar was told.

David Taylor, managing director of ICV Information Services on Prestel Citiservice said the next decade would see the introduction of a whole range of electronic services designed to woo the custom of the private investor.

"Technology is making possible new types of products which offer exciting challenges or, alternatively, pose enormous threats to the status quo of the financial services industry", he said.

Mike Sheldon, administration manager of the Gresham Group, forecast that in the near future building societies would handle the complete range of financial services, including insurance.

Richard Hooper, chief executive of Vass-British Telecom, said successful schemes like Nottingham Building Society's Homelink proved there was a public requirement for such systems and "viewdata offers the first low-cost, easy to use computer system for all".

over net

we are trying to do is get people to use their computer more. If they have a problem with software, instead of phoning up one of our staff they can leave a description of the problem in the mailbox".

This approach to software support is an extension of the bulletin board idea with which users swap problems and solutions for software products. There is a strong likelihood that other software companies will follow suit and a number are looking into the idea.

Bolton believes that it is the only way to go in the future owing to the enormous cost of software support compared with the low cost of the products in the personal computing market.

Traditional methods of software support are slowly being abandoned for all but the most expensive product because companies just cannot afford to sell at current market prices and provide comprehensive support.

Postbag

YOUR American report in issue No. 2 of TeleLink omits to mention that the use of Bell 103 tones in this country is illegal, since they are very close to some of the tones used for interexchange communication here.

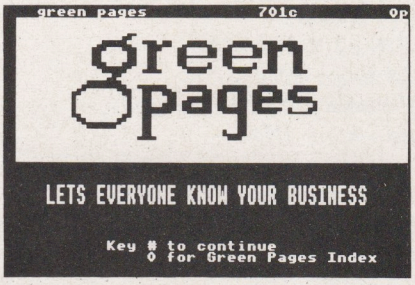
While I am sure the old hands are well aware of this, the coming of cheap modems will introduce many less informed people to the scene who may not know of the possible dangers of using them.

I do not know of a modem which has received BABT approval without having any Bell facility made inoperative. – **John Wallbridge, London.**

HAVE you heard the one about the Irish videotex called Patric? No this time it isn't a joke. Patric Videotex is the company responsible for writing the software for the Irish Libraries Database, as well as being an Irish distributor for Tandata.

Launched in response to a need for more specifically Irish information, the new database offers more than 50,000 reference sources.

Now there have been rumours about a Scottish database to be called Angus . . .



GREEN Pages, the national trade and services advertising directory on Prestel, is celebrating its first birthday with 2,600 pages of information available. New pages are being added at the rate of 300 a month and accesses are running at over 20,000 per month.

It uses Metrotel Viewdata Services' software to run its numbered indexing and highly sophisticated system of cross referencing of the 600 index entries under 250 classification headings.

Telesoftware on Channel 4

CHANNEL 4's teletext magazine 4 Tel is launching a telesoftware service, transmitting computer programs over several pages of the Oracle-style system for downloading by Spectrum owners via a special adapter manufactured by OEL.

The device automatically finds and displays a free telesoftware index page on 4-Tel and allows users to store pages on Microdrive or produce an immediate printout.

A new TV series called "4 Computer Buffs" on Monday evenings features the first ever transmission of software by light, the first interactive bulletin board for TV viewers, and the first television comparative test of hardware.

Bulletin boards Down Under

– with phone numbers for dialling direct from the UK

AN Australian reader of *TeleLink*, Jon Biddell, of Parramatta, NSW, sends us the following list of Remote CP/M (RCPM) and other BBS systems down under.

He says most are open for public access. A requirement of Telecom is that they have an access password, which is usually DDT. All messages are sent to the other party by name. Very few worry about user ID numbers.

"If anyone tries the MICC-BBS, say hello to member number 1355 – me", Jon asks.

Software Tools RCPM
(ST-RCPM)
010 61 7-378-9530
24 hours EST
Possible fee to be charged.
Password: DDT

MI-Computer Club BBS
(MiCC-BBS)
010 61 2-662-1686
24 Hours EST
Club members only full access.
My password may be used freely: 1355-ZAPHOD
Fee $A20
Visitor access allows 10 log ons to "poke around".

Micro Design Lab RCPM
(MDL-RCPM)
010 61 2-663-0151
24 hours EST
Password: DDT

Sydney Public Access RCPM
(SPA-RCPM)
010 61 2-808-3536
24 hours EST
Password: DDT

Omen RTRS – Remote TRS-80 System
(OM-RTRS)
010 61 2-498-2495
1600-0900 EST weekdays
24 hours weekends
Password not known – new system

Sydney TRS80 Users Group RTRS
(STRUG-RTRS)
010 61 2-332-2494
Full access for club members only.
Visitors' access allows 10 log-ons.

Sorcerer CBBS
010 61 3-836-4616
24 hours EST
(Haven't accessed this one yet!)

Melbourne CBBS
(MICOM-CBBS)
010 61 3-762-5088
24 hours EST
Full access for club members only.
Visitors' access allows 10 log-ons.

Tardis RCPM
(TARDIS-RCPM)
010 61 3-67-7760
1800-0800 EST weekdays
24 hours weekends

Gippsland RCPM
(GL-RCPM)
010 61 51-34-1563
24 hours EST

Adelaide Micro Users Group BBS
(AMUG-BBS)
010 61 8-271-2043
1000-2200 CST only
Full access to club members only.
Visitors' access allows 10 log-ons.

Outback RCPM (Darwin)
(OUTB-RCPM)
010 61 89-27-7111
24 hours CST

Omen-II RTRS (Darwin)
(OM2-RTRS)
010 61 89-27-4454
24 hours CST

Attache RBBS (New Zealand)
(ATT-RBBS)
010 64-9-76-2039
24 hours (New Zealand is about two hours ahead of EST)

Ausborne BBS
(AUS-BBS)
Osborne Users' Group
010 61 2-95-5773
Password: 1 Osborne
2 Act

Coup for Easylink

EASYLINK, the Cable and Wireless electronic messaging service, has scored a major coup with ACT adding the service to its list of Communique recommended networks. It follows on the heels of another deal arranged between Apple and Easylink.

ACT market the communications package Communique which allows easy access to a wide variety of services. Now Apricot users will be able to use Easylink's telex service.

The basic charge for sending 200 characters is 12.5p and registration fees for the service are included in the cost of the Communique package.

Easylink connects to the worldwide telex service and enables incoming messages to be transmitted direct to an executive's desk top.

The Communique package allows Apricot users to auto-dial the Easylink centre over telephone lines, cutting out the cost of dedicated telex lines and equipment.

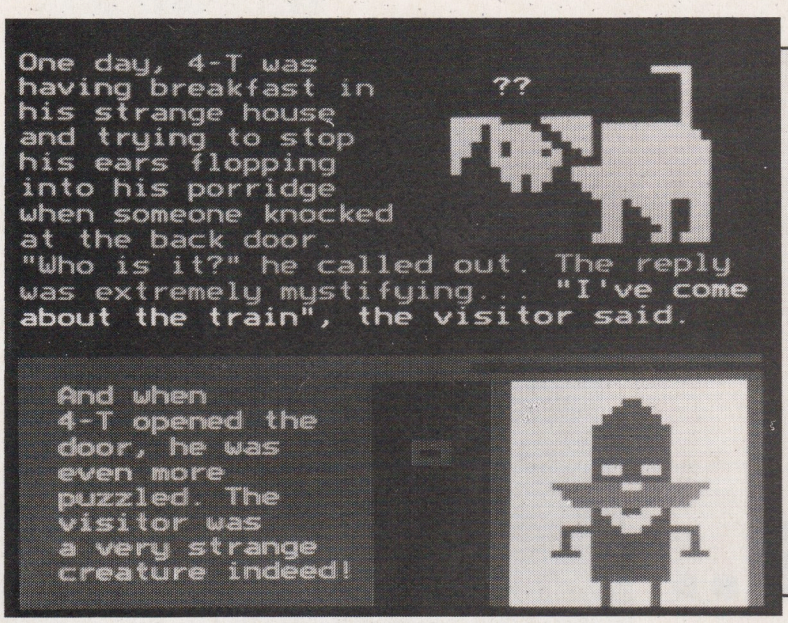
Help for the handicapped

A DEAF young Leeds mother has called on the government to provide financial assistance to enable similarly handicapped people to benefit from electronic mail. Doreen Naylor, who has been deaf since birth, makes the appeal in a new book, "Micros for the Handicapped".

"Having seen the transformation in hearing-impaired people on being able to use the telephone via the micro, I feel that financial consideration should be given to this aid", she writes.

Doreen Naylor currently runs her own network linking deaf families in Leeds and Bradford based on a BBC Micro. She operates it using a Pace modem and the Commstar Rom.

She singles out Commstar in particular as being "a must" for deaf people. "Having tried various terminal programs I found this to be the easiest to use, specially for the deaf who are new to this form of technology", she said.



Teletext on disc

THE Channel 4 teletext service 4-Tel has broken new ground with an offer to BBC Micro owners of a cartoon story on disc. It contains 12 episodes of 4-Tel's popular children's feature series, "The Fantastic Adventures of 4-T", and comes with an animated introductory sequence. The reader can "turn" the pages himself or "ask 4-T" to turn them at selected intervals.

"The concept is that of a story book brought into the electronic age with all its advantages like glowing colour and animated sequences", said 4-Tel managing editor Mort Smith.

"We believe it is the first time a teletext feature has been offered in this way – and incidentally it is a good example of the possibilities of mode 7 graphics on the BBC Micro".

Database spots troublespots

IT cost French civil engineering company CCI £800,000 recently to ransom four employees from Sudanese rebels. The firm might have saved itself £796,000 had it been able to access the international risk section of Datasolve's World Exporter database.

This service came on line in the New Year – too late to benefit CCI, but offering reassurance to other companies, institutions and markets trading internationally.

Today's volatile world is littered with potential trouble spots – some of them on a very short fuse. The trick is to identify them before firms' vulnerable overseas physical assets and employees are endangered.

The key, of course, is up-to-date intelligence. Datasolve's service reviews political and security risks in 142 countries from Algeria to Zimbabwe, with particular focus on 65 countries selected for their significant foreign business interests.

For £4,000 a year subscribers get an overview of the most volatile countries and regions, projections of likely developments, summaries of recent violence, analysis and assessment of political developments and risk to business, security assessments and detailed regional analyses combined with longer-range risk projections.

The database is fed by international political risk consultancy Control Risks. Its 20 full time London employees process information from more than 30 retained advisers – a worldwide cross section of well travelled academics, retired diplomats and civil servants and businessmen – as well as monitoring leading international news wire services and publications.

Control Risks director Roger Mears denies rumours that his staff is packed with former SAS and intelligence operatives – "They probably wouldn't tell me if they were" he says disarmingly – but says they are the cream of international risk analysts.

This concentration of intellect and experience is now being channelled, through the World Exporter service, toward eradicating headlines such as "Britons held by rebels" from the front pages of our national newspapers.

"Our aim, simply expressed, is to make organisations aware of situations abroad so they can protect themselves and their people", says Mears.

Papers 'on brink'

TELETEXT news services will soon drive American evening newspapers to the very edge of survival because of the new medium's ability to instantly report on and continually update news events, according to a report in the US information industry journal Video-Print.

Teletext is said to threaten to beat the evening papers at their own game and steal their post-workday readership even as the rising cost of printing and delivering a physical product is forcing many smaller papers to cut back on their coverage.

Similarly teletext's 24 hour daily availability is expected to undercut nightly television news broadcasts by freeing viewers from the programming schedule, and, Videoprint reports, its basis in text permits it a level of detail TV news cannot match.

This combination, plus its immediacy and updatability, will dramatically alter the shape of evening newsgathering.

"No technology is more friendly than teletext because it is basically nothing more than television", says Video-Print's assistant publisher, Steven B. Weissman.

Where no bank has gone before..

THE Bank of Scotland has ventured where no bank in the UK has dared to venture before with a full blown service for home and small business users.

It has been offering a limited service through the Homelink project on Prestel, but has now really entered the financial services war in an effort to grab a market share in England and Wales.

The home and office banking service harnesses the full armoury of new technology available today for companies to extend beyond their normal geographic boundaries.

There are only 10 branches in England, but the bank's Prestel service coupled with cheque and credit card facilities available with a number of major UK banks puts the Bank of Scotland on the verge of a marketing breakthrough.

Officials made light of the technology warfare between banks, but there were some hints in the press launch speeches.

David Dunlop, the assistant general manager, said: "We believe we have been among the leaders in electronic banking – and we wish to remain in the vanguard of progress.

"Looking at the technology available today in interactive viewdata systems, telecommunications and home computers, with cablevision on the horizon and potential growth in electronically provided services like teleshopping, we believe that opportunities for customers doing their banking from their own TV sets at home are now enormous.

"Coupled to that, a high quality home banking delivery system will give us access to retail markets beyond our traditional domestic base".

The chief executive, Bruce Pattullo, was even more emphatic after the launch: "I can see a very rapid movement towards the age of the cashless society where all transactions, whether at the supermarket or local corner shop, will be conducted with a plastic card and reader connected to a financial services network.

"The increase and success of automated teller machines is proof that technology can be harnessed to deliver services at a time convenient to the customer in a method which he or she finds easy to use".

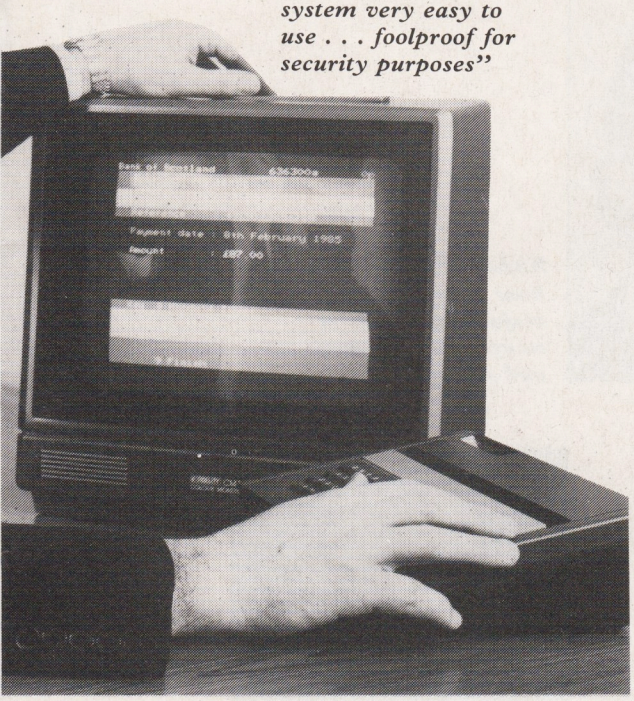
The bank has had a record of introducing innovative services including:

- In 1983, in conjunction with Glasgow's Strathclyde University, it set up GAINS – Government Assistance Information Service.

It provides from a computer data bank current details of all loans, grants and other forms of aid by Government and is free to customers and non-customers alike.

- Homelink was introduced over two years ago with the Nottingham Building Society to produce a facility which brought together a building society account and a Bank of Scotland current account, into the subscriber's home via the TV screen.
- England was the major target area in 1983 when B.o.S. were the first Joint Stock Clearing Bank to launch a high-interest bearing cheque account. Bank of Scotland's money market cheque account has now become the generally accepted generic term for such accounts.
- A year ago the bank joined forces with the Alliance Building Society to bring another new concept to the market place. The banksave account links a deposit account in the building society to a current account at the Bank of Scotland, with an automatic computer sweep between the two.

Each of these innovations, said Mr Pattullo, involved the application of computer technology within the Bank of Scotland. "Part of our strategy for approximately three years now has been to maximise the usage of technical advance, particularly where it helps the bank to introduce a service or product without the support of a traditional branch system", he said.



Ian Farquharson: "We tried to make the system very easy to use . . . foolproof for security purposes"

Micro owners are the prime targets

A TEAM of more than 200 human guinea pigs has been experimenting with the Bank of Scotland's home and office banking service – with security of information a high priority.

All Bank of Scotland employees, they have tested the system in an attempt to eradicate any potential bugs and help to make it very user friendly.

The bank insists that the system is foolproof unless users fail to guard their special identity codes adequately.

The lengths the bank has gone to reflect this effort, with the user manuals and instructions being the clearest of any seen by *TeleLink* from vendors of electronic information systems.

The customer help desk facilities are impressive too with someone available on the telephone seven days a week and well into the evening – emphasising the bank's belief that this is an evening and weekend service.

The Bank of Scotland has negotiated a special discount price for a dumb terminal – an alphanumeric infra-red keyboard from Tandata with modem technology inside it for £95.

That's a real price breakthrough, and will be a big attraction for users without micros.

But the micro owner is a prime target for the bank. "People with micros are very technically aware of electronic services", says marketing man David Dunlop.

So what of the thought of hackers attempting to crack the proverbial electronic safe?

Behind the home and office banking service are running two IBM 3080 mainframes which hold all the bank's data – with one of the applications being viewdata.

The bank has taken a standard viewdata package which IBM markets and their own software experts have added further tweaks to give high level security.

Ted Sewell, of the bank's systems investigation team, explained that in the view of experts in the field the bank

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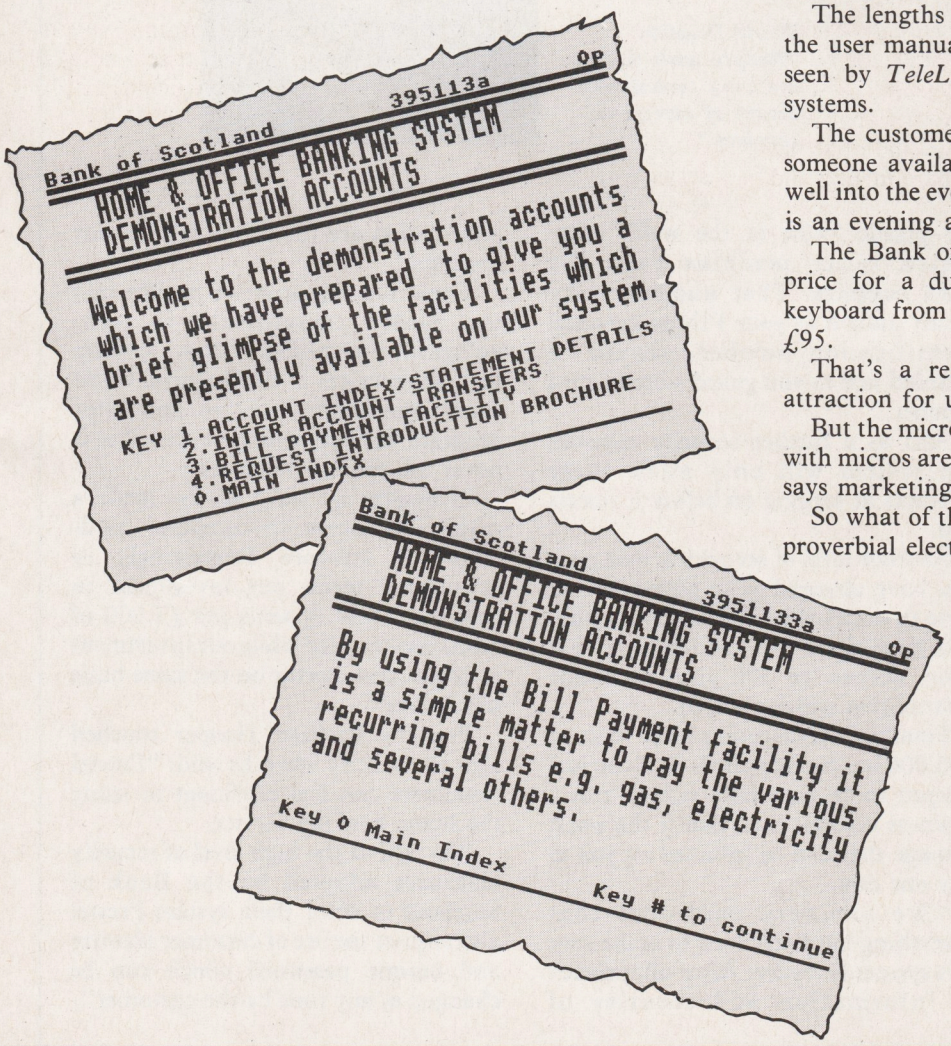


From Page 11

was secure unless users abuse their own passwords.

Although there has been much publicity about hackers breaking into Prestel it is known that this was only achievable because of lax security on the part of humans, not hardware and software.

The bank's mainframes are linked to Prestel's network in London via two 9600 baud links with two PSS lines as back-up.

Unlike many gateway systems from Prestel, there is no front-ending the connection for emulation purposes, with a consequential reduction in speed of accessing pages.

At the launch of the service the speed of access was almost as fast as the display of Prestel pages keyed directly. Most impressive.

The service announced last month will be enhanced during the year. The bank is known to be investigating more interactive applications, particularly where micros are involved.

Although the bank's main aim is to attract home users or small businesses operating from home, the commercial office accounts may be a target later. Here viewdata harnessed to a micro's financial planning, analysis and database software capabilities could be really exciting.

"It is too early to say anything", said a bank spokesman, "but we have a number of enhancements in mind for home and business customers".

Certainly the bank has invoked several levels of protection. After logging on and putting in your Prestel codes and passwords users are not allowed to pass through the gateway – and inside the bank's data – until they have put in two further sets of passwords.

"We tried to make the system very easy to use and we spent a lot of time making sure it is foolproof for security purposes", said Ian Farquharson, senior manager of Automated Customer Services.

On first joining, users are all given a keycard password which must be changed on first logging on. It is any combination of letters and numbers from four to eight characters.

You also have to enter your bank keycard number which matches with the plastic "hole in the wall" automated teller machine card the bank supplies. That number, commonly known as your PIN or personal identification number, should be guarded just as you guard a credit card number.

And as a further security measure the system will only allow three attempts at logging on before it rejects you.

Another level of security is that once you have changed your password you have to notify the bank in writing that you have done so – and during that time access to all your account information will be barred.

Finally, a transaction level limit of £25,000 has been applied. So if you just happen to be especially rich or run a business account then that is the worst damage that can be inflicted on you in any one day.

"We are very confident that everything has been done to make sure this system is secure. After all, privacy of information and security of information are the prime facts in our business".

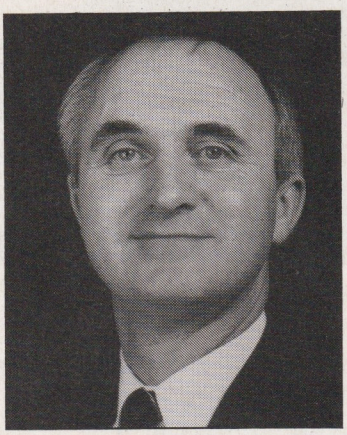
David Dunlop gave an insight into the bank's commitment to technological innovation. "New systems and new services in the financial world today inevitably involve computer program development time and that is never an unlimited resource.

"However we have always made a major investment in computer hardware and software. Interestingly, in accounting terms our investment in computers and systems per £1,000 of assets has doubled while our investment in bricks and mortar on the same basis has halved".

Prestel's Richard Hooper touched also on security when he said: "Prestel customers can feel confident in using the home banking service.

"As well as the high level of security measures adopted by the Bank of Scotland to enter their system Prestel also require the use of customer identity and unique password which can be changed at any time by the customer".

Richard Hooper: "We have always made a major investment in computer hardware and software



David Dunlop: "People with micros are very technically aware of electronic services"

Modem WS 2000: why it's the experts' choice.

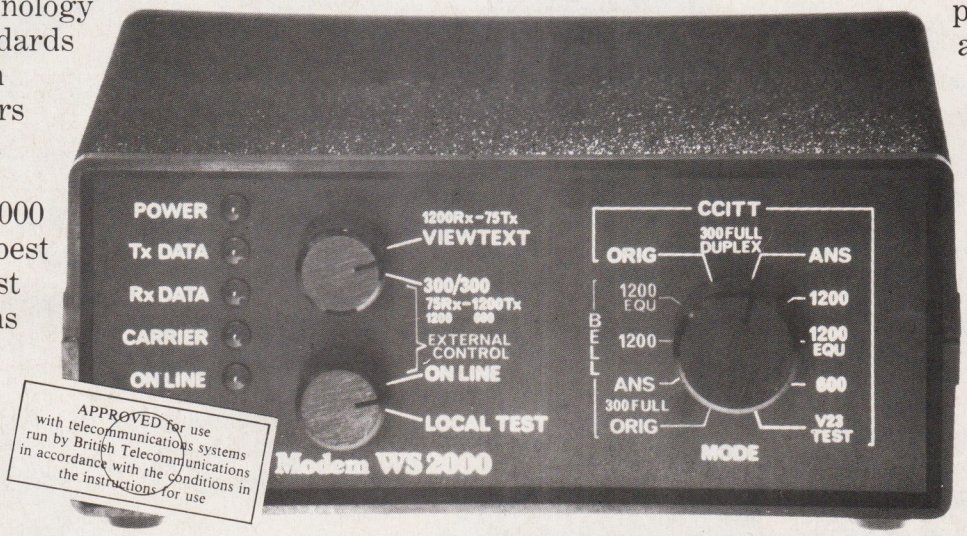
You don't need to be told about the information revolution – you already know that without efficient data communications, you and your business may not survive it.

And you know that a modem will be a vital part of your survival kit.

This is why you should choose Modem WS2000 from Miracle Technology.

Quality – In concept and construction Miracle Technology sets the standards other modem manufacturers aim for.

Quite simply, WS2000 is one of the best designed, best made modems you can buy.



It is approved for PTT use in the UK and Holland, with approval pending in other European countries.

Flexibility – As a multi-speed, multi-standard modem, WS2000 enables data transfer between almost any two computers – world-wide.

WS2000 gives instant access to the vital information sources of Prestel, Micronet, Telecom Gold and a vast range of public and private databases.

WS2000 can also convert your computer to a telex terminal, giving you inexpensive 2-way international telex facilities.

WS2000 is suitable for use with a wider range of computers than virtually any other modem, and we can offer software packages for most makes.

Versatility – No other modem offers all the facilities available with WS2000.

Its unique versatility means it can be expanded by the addition of autodial and autoanswer options (presently undergoing approval testing with BABT), plus direct computer software control of the modem and much more.

Service – A large dealer/distributor network both in the UK and abroad means you're never far from a WS2000 stockist.

And our Customer Service and Technical Departments are happy to give help and advice.

The Experts – Thousands of users depend on WS2000 – local authorities, government departments, multi-nationals, private companies and individuals.

WS2000 is the modem chosen by the BBC to demonstrate a UK-USA datalink live on TV; selected by Cable & Wireless/ Western Union for their Easylink Telex Service; taken round the world on Operation Raleigh; in action for CBS News, sending front-line war reports around the world.

WS2000 is the modem used by people who need reliable data communications today – and every day.

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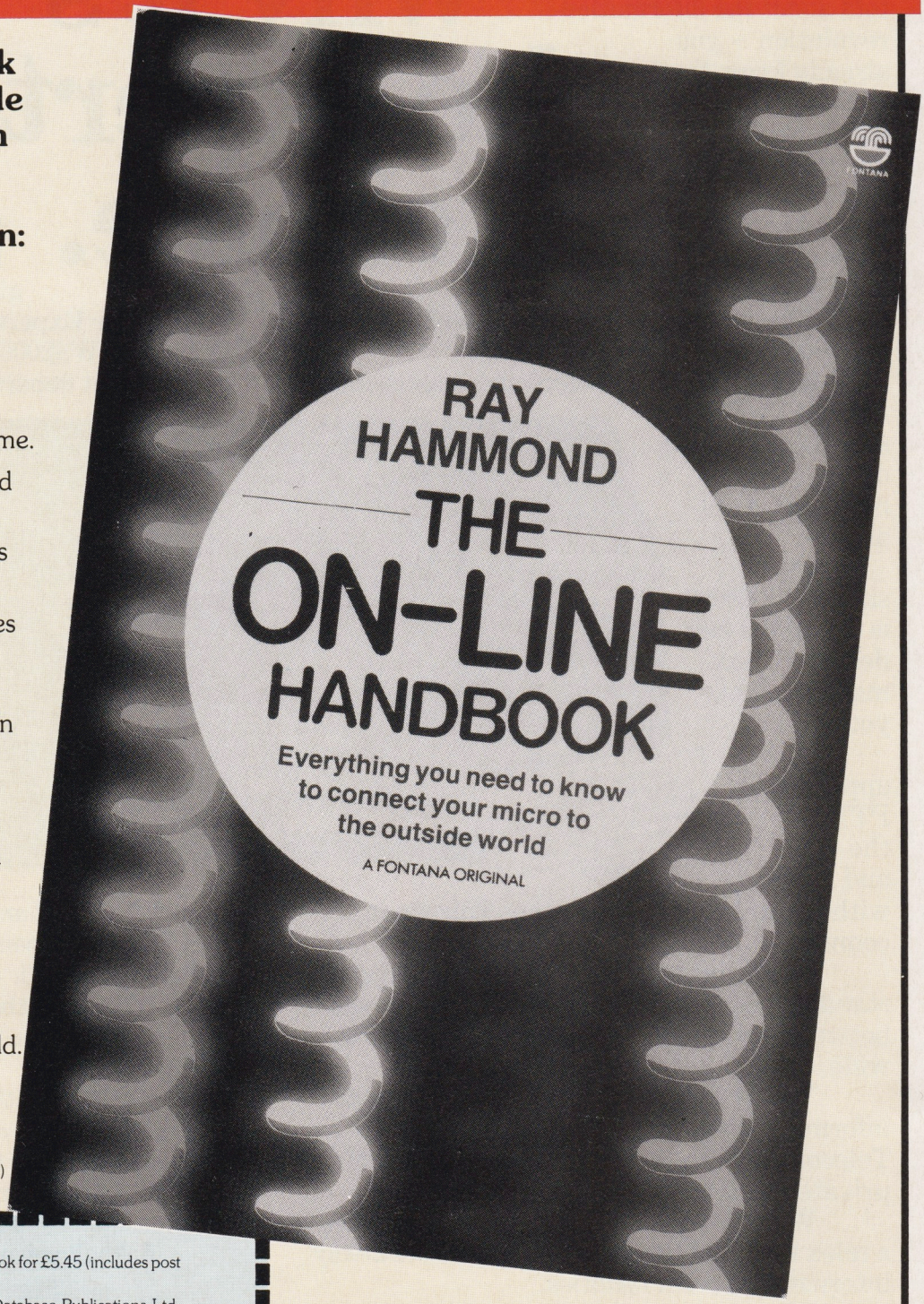

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Briefs

BRITISH Telecom is to market the ICL One Per Desk under the name of the Merlin Tonto starting in April. It views the machine primarily as a communications tool, and hopes to find a ready market for it among its installed base of phone system users.

★ ★ ★

CANADIAN investment dealers Richardson Greenshields has acquired an Autonet from ATS (Communications) of Haywards Heath. This controlled message switching system is now to be used by the company's offices in London, Frankfurt, Zurich and Geneva.

★ ★ ★

A £250,000 Modcomp Viewtracs viewdata system has been purchased by Poundstretcher, the British Airways subsidiary, for use at its Heathrow reservations centre.

It has been brought in in time to deal with the peak holiday traffic. In all, some 7,000 viewdata users can be supported on the system with up to 96 simultaneously.

Supplied by Systems Technology, it will run in conjunction with British Airways Booking System.

★ ★ ★

LLOYDS Bank International offices worldwide are soon to be linked by the Sophonet wide area network from Philips as a result of a deal estimated to be worth £2 million.

The network is eventually to have three control centres, with London taking care of Europe and the Middle East, Hong Kong catering for the Far East and New York controlling North and South America.

★ ★ ★

FORD has launched a pilot scheme to provide electronic transfer of computer-aided design between several of its plants and suppliers. The object of the exercise is to provide all the information the supplier needs to supply components.

Electronics are building business

WHEN John Webster joined Nottingham Building Society as heir apparent to the managing director back in 1970, it was a sleepy establishment with only four branches.

Now John Webster just isn't the type to while away his hours contentedly in a backwater. So he began to devise a 10 year game plan to find the Nottingham "a significant niche in the marketplace".

And when he became Chief Executive in 1972 he began to recruit a first class team – poaching from other leading societies – to turn the plan into a reality.

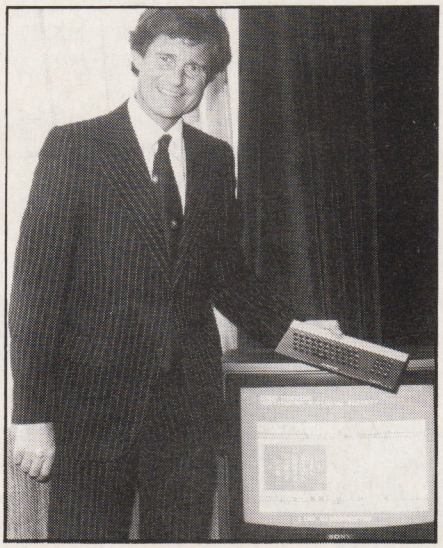
"You see there we were, having to compete with the largest in the land and they had budgets with which we couldn't compete", John Webster told *TeleLink*. "So we decided to play a waiting game in the hope of being able to take the service straight into people's homes".

At that time the 10 year plan was based on the impending arrival of the picture phone. "We saw this as the key – but we were wrong. It never did happen. But what took its place as far as we were concerned was the interactive Prestel service", he said.

"And that's why we seized the opportunity to become the first electronic building society. It opened up business to us that we could never have reached under normal circumstances".

Today Nottingham Building Society has some 60 branches – still not very large in terms of the big boys. But its sphere of influence is out of all proportion to its physical size.

It now offers the complete electronic building society, banking and teleshopping service under the title of Homelink. Householders all over the country now log on to Homelink for an immense range of services from finding a fur coat to paying for it (with their own money that is).



John Webster . . . played a waiting game

Such is the popularity of Homelink that the society's profits have gone up by a record 30 per cent since the electronic service was launched in September 1983.

And as John Webster is convinced that financial services have a rosy future on viewdata, the Nottingham has now gone into telebroking – allowing people to play the stockmarket from the comfort of their own home.

Launched last October on an experimental basis, the society decided to initially limit the service to people with £2,000 to invest over two months.

The Nottingham was overwhelmed with the response, with close to 200 applicants in the first 24 hours. After weeding out, 100 people were accepted – and of these 60 per cent were first

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From Page 15

time buyers of stocks and shares.

Mind you, the Nottingham team readily admits to timing the launch to coincide with the interest being generated by the British Telecom flotation. In all, Vickers da Costa, the brokers for Homelink, had to process requests for more than one million BT shares.

The success of the experiment will result in the stockbroking service being formalised any day now, with possibly two leading firms of stockbrokers assigned to handle the business.

Why has the Homelink stockbroking service boomed when stockbrokers are just a telephone call away?

"Convenience is the key as with all our services", insists John Webster. "We offer professionalism at all levels backed up with being there 24 hours a day. Which is just the opposite to conventional shopping. Shops are open more often than not during the hours when most people can't get to them.

"That's crazy, but it's the way it is. Well we intend to change all that. For we will provide a service when and as people want it".

He and his team are satisfied that they have found the cornerstone of continuing success by entering the electronic marketplace.

"We see ourselves as the Apple Computers of the building society world", he says. "Ten years ago they were unknown. Now they will never be as big as IBM but they have found their significant niche.

"We admit we will never be the biggest building society but when it comes to electronic building societies then that is our niche – and we intend to make the most of it".

The "sleepy establishment" that just grew and grew . . .

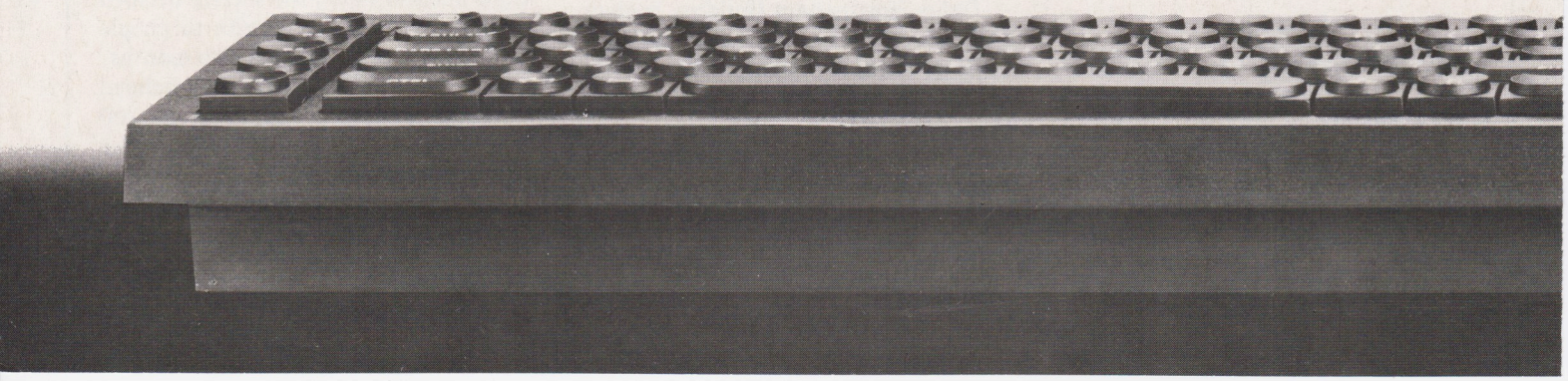
Recommended by Sinclair Research Limited. Guaranteed, designed and manufactured by O.E. Ltd, Cumbria

This modular communications package gives your QL more versatility and potential than probably any other add-on.

Using expansion connectors, the units stack on top of each other to provide a universal communications facility for VT100 emulation, telex, electronic mail, home banking and teleshopping, user-to-user communication, rapid data and word processor transfer between sites, downloadable software and access to the international PSS network and databases such as Prestel and Micronet 800.

The modules can be purchased individually, starting with the Q CON for interfacing, micro-based I/O control, and midrodrive software support for itself and subsequent modules. It accepts any modem, including of course the Q MOD V23 modem. Q CALL provides unattended auto-dial and answering.

Take a quantum leap into co



Say it with efficiency

A MORE efficient way of saying it with flowers is on its way for Interflora. The association of flower retailers plans to place a terminal in each of its 2,500 UK member shops to replace the telephone as a means of transmitting orders around the country.

A six month pilot scheme involving 50 Interflora members will take place this year, after which the association hopes all its outlets will go on line with the new system.

The network will use the Merlin M2105, an Electron-based machine designed by British Telecom's business systems equipment division. It is a small desktop machine with a built-in modem, auto dial and answer, VDU, dot matrix printer and associated software.

It uses the T-Link communications network protocol with file transfer between terminals over the public telephone system.

Not programmable, it has a limited voice response library, powerful built-in text editing facilities with text messaging and communications software as standard.

An eye on the future

WITH all eyes in the City focussed on the fate of the pound on foreign exchange markets, a new feature on Prestel CitiService is likely to attract more than usual attention from the money men.

Forexia (UK), the company set up by leading "chartist", Charles Ranald, is providing technically-based foreign exchange forecasts as an official information provider to CitiService.

It bases its predictions on the output from its IBM PC computer software package, Forextrend. There are up to six new pages to access on CitiService under Page ***88130,*** with two or three of them updated daily.

"Financial directors and exporters worried about their future foreign exchange commitments can now, for 50p a glance, get a professional opinion that hitherto was only available to large organisations", said Ranald.

★ ★ ★

HOME banking comes to Germany this month, with Karlsruher Sparkasse doing for the Federal Republic what the Bank of Scotland is doing for Britain. It's the latest service to be offered over the West German PTT's viewdata service, Bildschirmtext.

But before you leap at the likely cost of all this, just take a look at the price details in the order coupon. Because in the same way that the QL gives you so much for so little, the cost of communicating now takes a downward jump of the imagination.

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V23 modem. Direct telephone line connection, 1200/75 baud full duplex operation for Prestel and other database access, 1200/1200 baud half-duplex operation for user-to-user communication.

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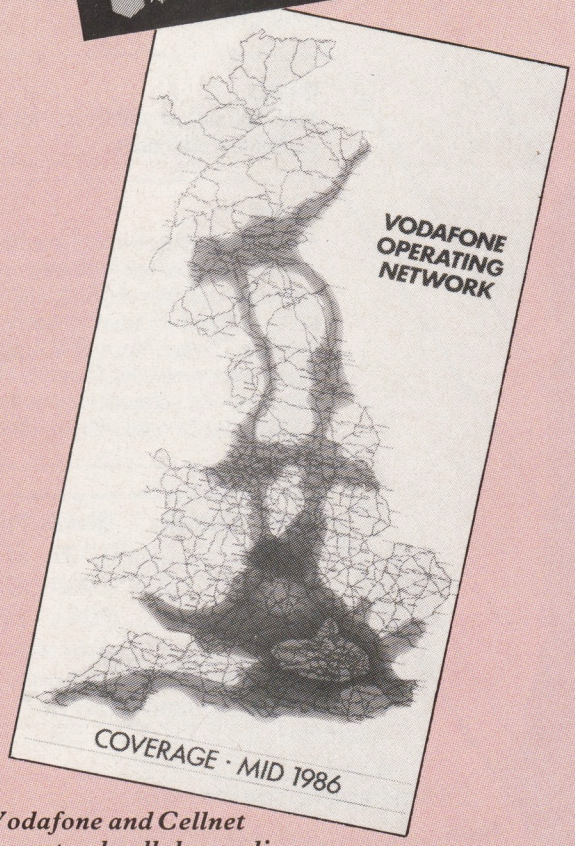


How Vodafone and Cellnet plan to extend cellular radio coverage

TONY LEAH looks forward to the day when in-car computing becomes commonplace

PEOPLE who regard cellular radio as merely an expensive toy for oil-rich sheiks and pop stars had better think again. The network system launched in January is no upmarket citizens band. Nor is it just a more sophisticated version of the in-car telephone.

What it represents is the first step toward the office on wheels – complete with computer and modem and equipped for word processing, facsimile, telex, electronic mail and other services.

Those who think that sounds far-fetched will not have to wait long for proof that it isn't. Operators of both the competing cellular radio networks – Cellnet and Vodafone – are working on devices for connecting portable computers to the system in the same way that modems let micros talk to each other over the telephone lines. And other firms have similar projects in hand.

The question is when this great leap forward will take place. When will it be possible to plug a computer into cellular radio the same way one can be connected to the public telephone system today?

There is no simple answer. Firstly, the devices have to be manufactured and tried. *TeleLink* understands there will be no unreasonable red tape barriers placed in the way of firms who want to produce and test such equipment.

In fact manufacturers are being invited to submit equipment for consideration to the British Approvals Board for Telecommunications working in conjunction with cellular radio's ruling Joint Radio Technical Interfaces Group. This body includes representatives of Cellnet and Vodafone, the Department of Trade and Industry, British Telecom operations and research branches, the British Standards Institution and BABT.

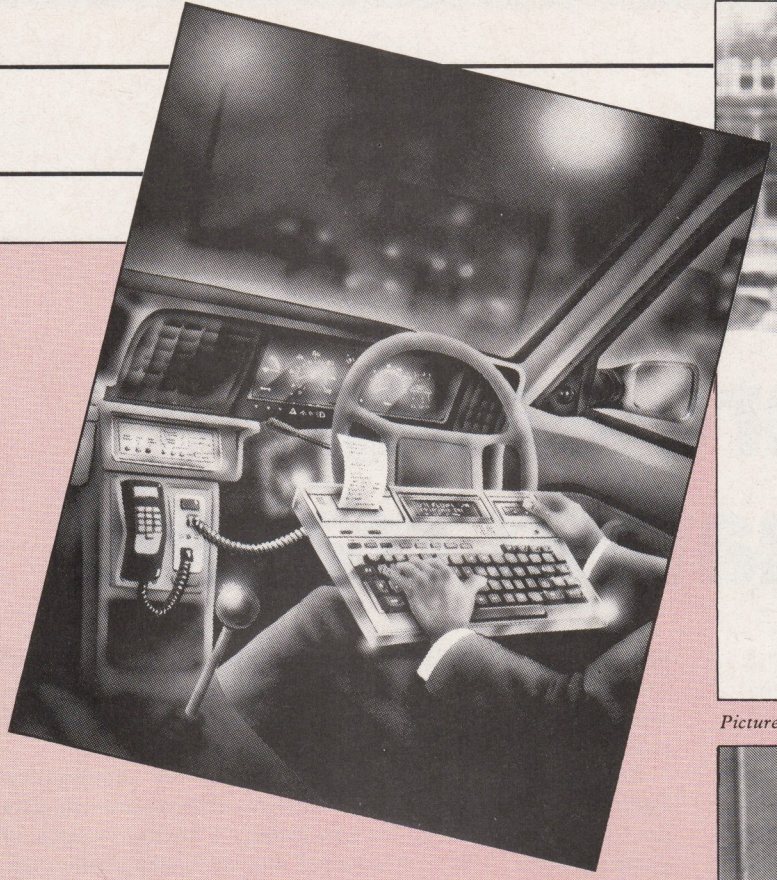
Manufacturers will be allowed to go ahead without unnecessary hindrance but not on a free-for-all basis. In other words, development and employment of computer linking systems will be closely monitored.

Secondly, there is the matter of BABT approval. The "green label" on currently available modem equipment is not sufficient for the cellular radio system. Separate approval from BABT will be needed for all such devices.

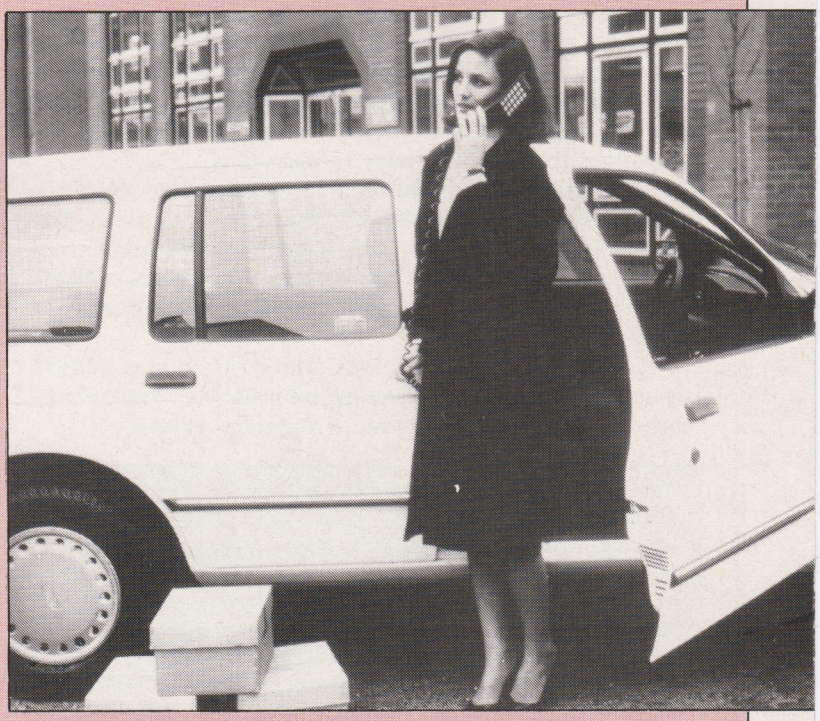
The Joint Radio Technical Interfaces Group has five working units, one of which has set itself the target of achieving a data standard for cellular radio within two years.

TeleLink understands this group will give all existing systems the chance to prove themselves and will also, of course, be looking at new devices. Although acoustic couplers will work with cellular radio it is believed the data standard working group considers them inferior to directly coupled modems.

It is believed the group would prefer the use of direct plug-in connectors or built-in modems, a superior method of coupling a computer to the mobile cellular radio and one that



Pictures courtesy of Granadaphone



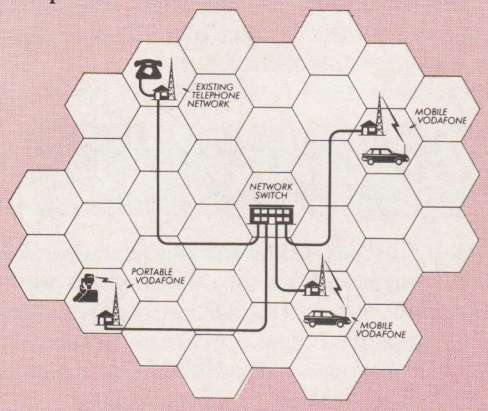
would produce higher quality transmission of data.

Radio propagation problems such as fading and interference, which have caused high data error rates in earlier systems, should be minimised in cellular systems because of the short range and the network's sensing facility and capacity to adjust the field strength to suit each location.

Cellular radio has to work with obsolescent as well as modern telephone equipment, a particular problem in London where British Telecom has not yet introduced its digitised exchange system – System X.

This problem will not disappear until BT has fully modernised its telephone network and is a major reason why the standards group wants to see only the finest quality coupling devices in the marketplace.

The growth of cellular radio may turn out to be swifter than anticipated. Cellnet moved into the Midlands at the end



of January while Vodafone expanded westwards, both well ahead of schedule.

The aim is for between 70 and 80 per cent of the population to have access to cellular radio by the end of next year and 90 per cent at the end of the decade, by which time there could be as many as 500,000 – or as few as 250,000 users, depending on whose estimate you accept.

The most important growth period is 1985/86, by the end of which there is every reason to believe that computer communication via cellular radio will be fully provided for, BABT approved and in widespread use.

Telesoftware eases the examination trauma

A MAJOR development that could help overcome a pressing administrative problem problem experienced by Britain's schools and colleges has just been launched by the BBC Telesoftware Service.

Twice a year virtually every secondary school and college in the country enters some of its students for O level and A level examinations. This is a complex task which is outlined later (my apologies to those who know the system and my sympathies to those who have to operate it).

Examinations are administered by organisations which are independent of the schools and education authorities. For historical reasons they are usually associated with universities. Some months before the examinations students must be registered with the appropriate examination body or board.

At school level, this task involves a designated (volunteered?) teacher collecting information from subject teachers, collating it, verifying its accuracy, entering it on a master sheet, then having it checked by both students and teachers. The operation is time-consuming, prone to errors, and often requires the teacher to be relieved of normal teaching duties for a period.

On completion the forms are sent to the examination boards, who contract computer bureaux to transpose the data on to magnetic media for processing; a further source of potential error. The data is loaded into the board's computer, then printed and returned to the school for checking. Only when this information has been checked can the real work of the examination board – sending examination papers, receiving and marking scripts, etc – begin.

The scale of the operation is enormous. The Oxford Delegacy alone has 1,500 centres, entering some 180,000 candidates for the summer examinations. Manpower costs for the administration of this operation are extremely high at both schools and examination board level. Indeed they would probably be unacceptable in the commercial world.

In 1982 the University of Oxford Delegacy of Local Examinations decided to improve the system for their centres. Following the Government-funded Micros in Schools scheme, virtually every school which entered students for examinations was equipped with at least one micro, most commonly a BBC Model B. The delegacy's mainframe required data in machine-readable form. Why not bring the two together and provide a much more flexible and efficient method of entry for the centre?

The decision was made to set up a pilot project under the control of Paul Humphreys. Its aim was to produce a software package for a variety of school micros which would allow entries to be made simply and efficiently. The software was designed to improve checking, cross referencing and verification and to create a datafile on disc which could be loaded directly into the delegacy's mainframe.

Sophisticated error protection and fail-safe techniques were included to ensure total security of data and operation. The project was so successful that in its second year, the number of centres using this method of entry had grown from the original three trial schools to over five hundred – one-third of all the delegacy's centres.

Increasing demand has brought with it a number of problems. For each examination period revised data must be provided, containing details of new subjects, reference numbers and so on. The mailing of discs with modified software to schools is an expensive and time consuming

By Lawson Brown
BBC Telesoftware Editor

BROADCAST telesoftware became a reality in September 1983. Following several years of research and development, the BBC officially launched a broadcast software service as an integral part of its Computer Literacy Project. The aim of the service was to make a base of high quality software available, free of charge, for its computer system.

During the past year the service, which is the first of its kind in the world, has undergone a process of continued refinement. It is now about to embark on a major new project to provide a regular service of software support for educational administration.

Telesoftware uses the BBC's teletext service Ceefax as a carrier. Ceefax is broadcast as an Ascii data stream using a few spare lines of the television picture. A 625 line television picture never did use 625 lines, 600 is nearer the true figure.

Access to the service is via a hardware add-on to the BBC Micro system. This is a one-off investment giving enhanced access to all teletext services and to the free broadcast software which may be downloaded and saved on to disc or cassette.

The BBC Telesoftware Service consists of ordinary teletext pages as well as software and may be found from page 700 onwards on BBC1 Ceefax. Since the beginning of the service the BBC has been developing applications unique to this method of software transmission. It has broadcast a large number of stand-alone pieces of software – the task for which it was initially designed – and has performed admirably.

Potential applications are, however, far more sophisticated, providing a service of rapidly changing information to the personal computer user in the same way that Ceefax provides a continually updated information service to the teletext viewer.

Children take a first peek into the big Prestel textbook

LIKE opening up the cover of a 300,000 page book, students all over Britain are taking their initial peek into Prestel Education, the country's first fully operational electronic information service for schools.

Careers, courses, information technology, educational microcomputing . . . it's all there in this cornucopia, plus networking and mailboxes and all the general interest features of the Prestel treasure trove.

Aimed at Britain's 7,500 secondary schools and local education authority teacher and advisory centres, and backed by the Department of Trade

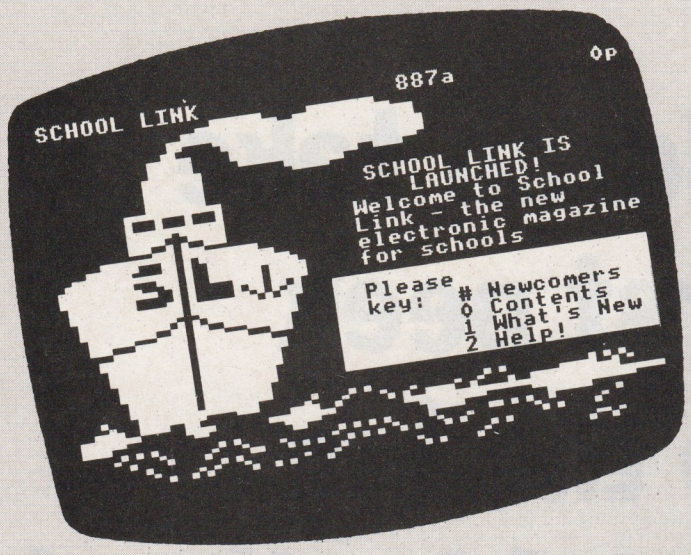
task. The obvious solution was to use the BBC's telesoftware service to transmit and maintain the software, free of charge, to every school in the country.

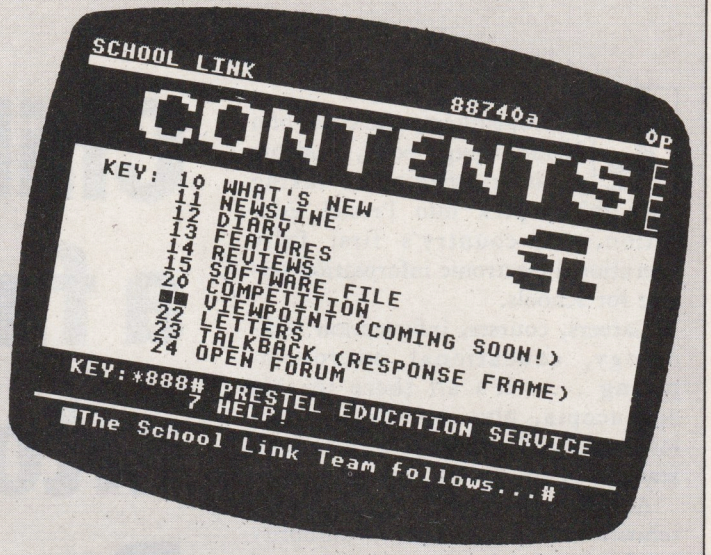
In January and February 1985, the BBC and the University of Oxford Delegacy of Local Examinations are providing this service. Every school in the country is able to download the software and use it. If they are registered centres of the Oxford Delegacy, entries may be supplied on magnetic disc, or by using a newly developed system of data transfer by telephone.

Discounts are offered by the delegacy for entries made this way. A large comprehensive school could recoup the capital expenditure on a telesoftware adapter in the first year of operation from these discounts alone, and the savings in manpower costs at centre level are considerable.

Preliminary discussions have taken place with other examination boards in an attempt to standardise on a data format. In the future, it may be possible for schools and colleges to process all examination entries using this system. These developments would be impossible, or financially unrealistic, without an efficient, free data transmission service.

This project clearly demonstrates the strength and potential of broadcast software services. During 1985, a new generation of software making use of the unique characteristics of the broadcast medium will be provided by the BBC Telesoftware Service, which will be designed to enhance and develop it across a wide range of applications.





From Page 21

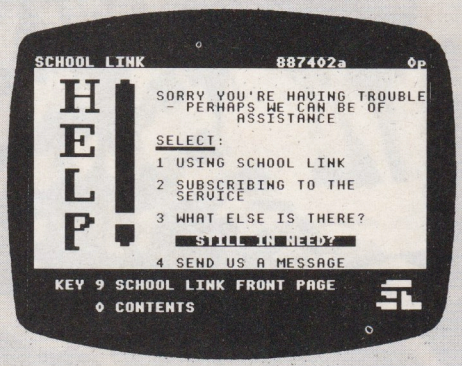
and Industry, the service has been developed by Prestel in partnership with the Council for Education Technology.

The Microelectronics Education Programme, the Scottish Council for Educational Technology and other educational organisations have also contributed to the package, which was launched officially on January 28.

What it contains is this:

- Details of more than 300 careers, provided by the Manpower Services Commission.
- Information about higher education courses at Universities, polytechnics, colleges and institutes of higher education – provided through a gateway link to Open University's mainframe computer.
- A service for teachers on educational applications of information technology, including details of IT courses, projects and examples of microviewdata databases which schools have created on their own micros.
- School Link – news, reviews, comment and feedback from the world of educational microcomputing. This will be complemented by special educational telesoftware for downloading by schools.

Additional features planned for this year include facilities to encourage communications between schools using Prestel Mailbox and special curriculum projects.



Schools will be eligible for a special tariff covering all Prestel charges of £49 a quarter. Annual cost for a typical school, including both Prestel and telephone call charges at local rates, will be between £250 and £300.

Also a low cost equipment package will enable schools to buy the modem and software they need to convert their micro into a Prestel terminal and run their own databases for less than £100.

Prestel is collaborating with CET in developing viewdata training courses and support materials for teachers and students. All subscribers get a free pack of training materials.

Good news for teachers is that Prestel Education appears to have overcome its copyright problems (see *TeleLink* No. 1).

A spokesman told *TeleLink* that the majority of Prestel's information providers had given permission for schools to download and utilise their frames. The rest are expected to follow suit shortly.

Times Network is right on target

HALF the country's local education authorities have joined The Times Network for Schools and the new service is on target to have 3,000 secondary schools signed up when it goes live in April.

A spokesman told *TeleLink* that some authorities are pressing for the network to be extended to include primary schools, and the Scottish Microelectronics Development Programme has recommended that Scotland's 2,500 schools standardise on the TTNS package.

Midnight downloading of mail is being developed to reduce the operational costs to schools even further, and there are plans to link the network to schools in Europe, the USA, Canada and Australia.

Satellite links are being set up to enable TTNS schools to communicate directly with Operation Raleigh and the Trans-Canada Expedition in the field, taking part in competitions run by the teams and logging and evaluating scientific research material sent to schools as the expeditions progress.

Schools will get weekly bulletins via the satellite link.

Meanwhile, the TTNS's representative, Lakh Singh, is taking part in the Operation Raleigh's search for the legendary lost city of Cuidad Blanca in Central America.

The hi-tech criminal versus old tech law

By Ulric Coker

COMPUTER crime is the glamour crime of the 1980s. It can bring high return for low risk. It is extremely difficult to detect and certainly difficult to punish, and what is more, is being carried out by, or with the aid of, directly or indirectly people within your organisation or even your home.

The motives for crimes which use a computer for the perpetration of dishonest acts can be from fun – challenging the system – to financial advantage, business to political advantage, industrial to military advantage. It may even be for motives such as revenge or malevolence against the computer itself.

Figures giving an accurate assessment of computer crime generally are difficult to come by. This is due to the fact that victim companies are often reluctant to prosecute, since it would be embarrassing to admit to inadequacies in their systems. However figures that have been made available indicate that sums in excess of £2.5 million a year are taken by computer thieves. This excludes frivolous waste of expensive computer time.

It is worth looking at a few of the crimes:

Tampering: The most common computer crime comes in two forms. Firstly, the Trojan horse or sleeping partner. This is where instructions are rearranged in a program at source. At a command from the perpetrator the computer starts performing unauthorised functions.

The beauty of this form of tampering is that the legitimate program continues its intended purpose. It is conceivable that a software designer could hide his Trojan horse among legitimate instructions, patiently awaiting the execution of the target application program, and covertly insert the Trojan horse and remove all traces of penetration.

Secondly trap doors or parachutes, as I like to call them, are the insertion of an access code or key during the de-bugging stages of the program. This allows our perpetrator to parachute into the system totally free of control.

Salami tactics: These are the commonest ones used in small-time computer fraud. The collection of small amounts of money, of no apparent consequence to the victim, are accumulated by the computer, instructed by the perpetrator. Eventually the accumulated sums are spirited away.

An example of such tactics is seen in a German case where a programmer working for a large company did not record deaths of retired employees. He simply collected the continued payments of the deceased employees' pensions.

Master key misuse: A legitimate special key that bypasses all the access controls in the system sometimes falls into the wrong hands.

Electronic piggybacking: Hacking comes in many forms, but by far and away this is the commonest. The hacker assumes a legitimate user's code or password and electronically interrupts messages and transmitted data. It is really a form of electronic impersonation. Alternatively the hacker exploits an improper sign-off, where the machine is still operating on the assumption that an authorised user is using the system.

Logic bombs: Similar to Trojan horses, their use can be more sinister. The perpetrator will trigger off a sequence of events or carry out an act that could, for instance, be to erase data for reasons of vengeance. Logic bombs may also be used to prevent detection of a fraudulent manoeuvre in the system.

A case of logic bombing explained to me by the person who carried it out (yes, we are still friends) is where a company was witholding his fee for programming a system. So he programmed in his ace card – hidden instructions that would shut down the accounting program, effectively stopping any future business for the company. He reported the fact to the company. No doubt they attempted to defuse the bomb, but eventually gave way to an uncompromising "blackmailer" – the computer itself. Rather neat I thought!

There are many, many other crimes that could be mentioned and come to light. However, you may be saying: "Well, they are not such bad crimes, not like rape or listening to Des O'Connor records".

Well, if you have become a victim of such a crime the effects could be disastrous, particularly in business. King of the *caught* computer criminals is Stanley Rifkin, who electronically chatted up the California Bank – Security Pacific's mainframe computer – to transfer £5 million to an East Coast bank.

Just to show that we Brits are equally as clever, five years ago a Plessey employee manipulated stock control data and

→

* *Ulric Coker is principal partner of House Martin Legal and Business Services*

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managed to remove a mere £500,000. Physical vandalism cost an American company £700,000. Convinced? I am. Well, what is not entirely convincing is the criminal law protecting your interests.

In a recent case of Oxford v Moss, although a computer was not used, the precedent set by that case is important. The facts were that the accused was alleged to have stolen a university examination paper. His intention was clearly to copy and return it.

Charges were brought under the Theft Act 1968 Section 4. They were dismissed on the basis that *intangible* property, that is the preparation of the paper and mental resources employed in its production, did not constitute property as defined by the Act.

The effect of this decision in relation to you is that programs and data cannot be stolen unless recorded on some physical medium or removed within the storage media.

The offence of obtaining a pecuniary advantage may be of some application. This could go some way to cover the case of the miscreant obtaining the services of a computer by electronic impersonation.

Perhaps the offence of conspiracy to defraud could be an avenue to explore, for obvious conspiracies between a programmer and a person outside your business, or even between employees,. However with so many computer crimes being committed by a sole offender, conspiracy fails to take place. Perhaps a computer should be considered a legal conspirator?

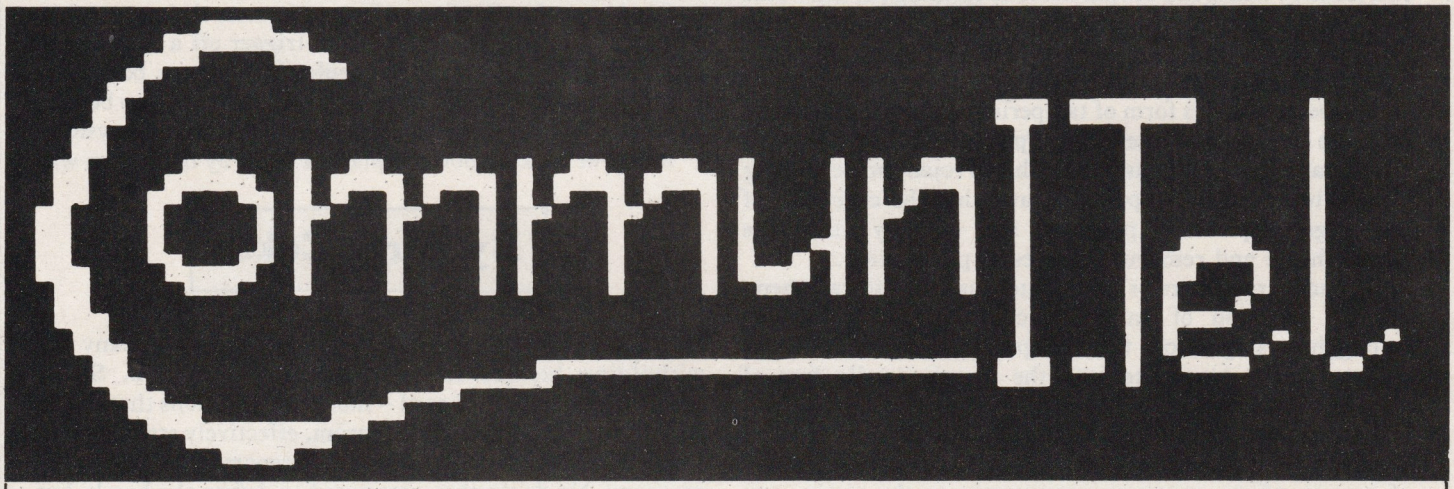
The offence of abstraction of electricity could well be a temporary failsafe for cases involving unauthorised use of computer equipment by computer staff. Possibly coupled with imaginative use of the offence of taking a conveyance without authority.

It is possible to bring charges under the Theft Act 1978, for obtaining by deception. However proving deception would be fraught with problems. Machines cannot be deceived!

It is clear that little case law and clear direction exists with regard to criminal sanctions in respect of computer crimes. Indeed, I add my voice to a call for clear legislation, revising the law relating to all offences concerning dishonest behaviour to encompass this new threat.

I have not set out all the pitfalls or discussed all possible sanctions. Possibly, security methods could be the subject of an article at some later date.

I hope, however, that you have captured the spirit of the new criminal against the old laws.



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Create your own viewdata bases & telesoftware.

Let others access them over the phone.

Explore the new world of electronic publishing & information services.

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* By far the most comprehensive and easy to use viewdata system for the BBC micro.
* Track tested since Nov. 83 in the national ITeC program.
* Subset to be bundled by Acorn with their new Winchester file server.
* Adapts itself to Disc or Econet Level II.
* Up to 195 frames on a disc.
* Multiple databases can be used simultaneously on a network.
* Special Education licence (Single school, multi-machine, multi-site licence).

The first low cost fully integrated off-the-shelf viewdata system in the world, the complete package includes SOFTWARE, MANUALS, LEADS and MODEM:
Nothing further required beyond the BBC micro and the new 600 series B.T. phone socket.

Shopping in the VAN of technology

What does the future hold for our supermarkets? PHIL MANCHESTER looks at one experimental scheme

IN the not too distant future going into a supermarket to buy your weekly shopping could change radically. The long term aim to get every product marked with a bar code is nearing completion and the next stage is to link bar code readers with stock and ordering systems.

The act of buying a pack of bacon could soon update the stores stock holding, initiate an order to the supplier for a replacement and generate all of the relevant paper work.

A trial system, operated by ICL's network services in cooperation with the Article Numbering Association (ANA), is bringing this day a step nearer.

The ANA is the organisation charged with allocating a unique number to every product on retailers' shelves, and the Tradanet network is the medium by which all of these wonderful things will happen.

According to ICL, Tradanet is the first genuine value added network (VAN) to be working in the country. It is based on an X.25 packet switch network using the Kilostream combined voice and data service with a capacity of some 64k. ICL is intending to introduce a Megastream service later with a two mbyte capacity when the system actually goes into "production".

At the moment four supermarkets – Tesco, Waitrose, Finefare and Boots – and four suppliers are operating the trial system. The suppliers are Reckitt and Colman, Rowntree Mackintosh, Cadbury Schweppes and Brook Bond Oxo. Many more suppliers and retailers are expected to join the system once the trial – now in its final phase – is complete.

The Tradanet system is particularly appealing because it can cope with virtually any protocol. Users connect to the PSS via a 2400 baud dial up connection using any one of a half a dozen accepted protocols. At present these are ICL's own C03, IBM's 2780, 3780 and the SDLC protocol associated with IBM's strategic systems network architecture (SNA).

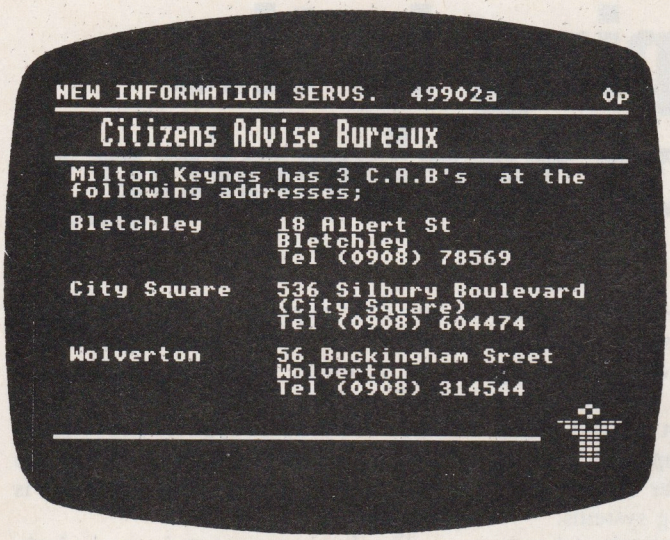
The system is administered via ICL System 25 minis at each node and eventually the system is expected to cover the whole country with access in every major town and city.

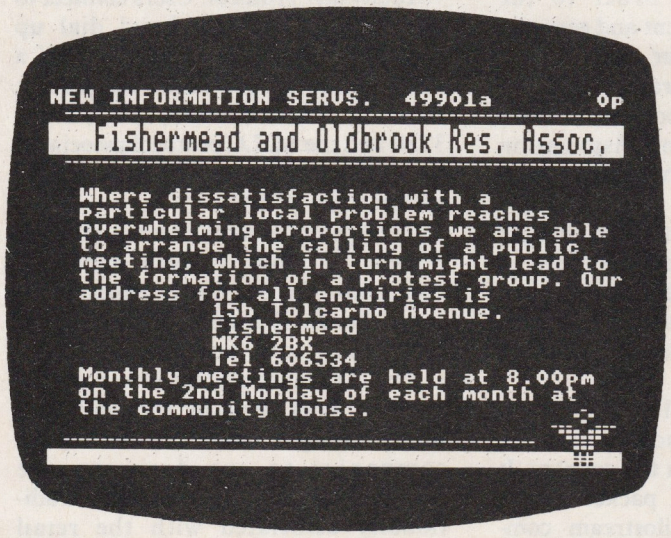
The Tradanet system is a continuation of work done by the ANA into standardising communications between companies to cut down on the enormous amount of paperwork traditionally associated with the retail distribution business. At present this information – conforming to the Tradacom standard drawn up by the ANA – is operated using magnetic tapes that are physically transferred from company to company. It is hoped that the network will make this system redundant.

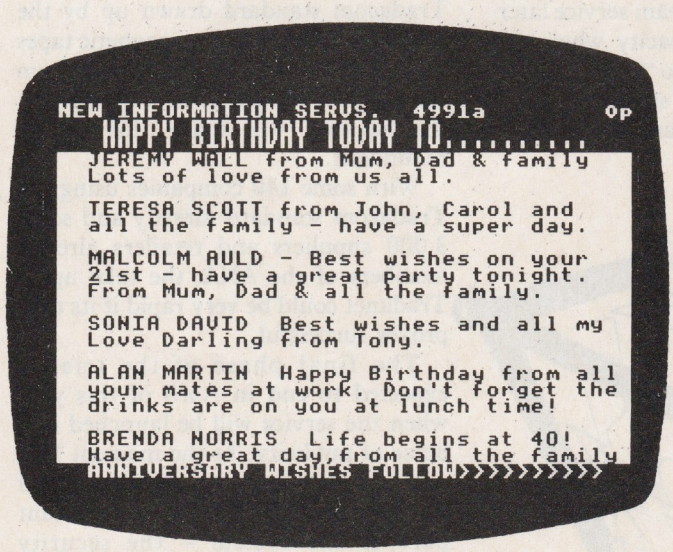
With some 140 companies using the Tradacom standard already and some 3,000 suppliers and retailers already members of the ANA, the take up of Tradanet could be very rapid if its trial proves successful.

The final phase of the trial is expected to end in April of this year when the service will be launched in a blaze of publicity. At the moment ICL and the guinea pig suppliers and retailers are testing the most important part of the system – the security aspects.

Community teletext







THE first full-scale local community teletext service is now under way through British Telecom as a forerunner to a new breed of cable-based services. Called Your Channel, the service is piped into 25,000 homes in Milton Keynes using the graphics and text capabilitites of viewdata and teletext.

A BBC Micro is used as a highly flexible editing station to create pages using a professional viewdata software package produced by Metrotel.

At the transmission end is a multi-user S100 CP-M based hardware package with sophisticated software controlling the display of pages and outputting the data via a PAL encoder into bright and colourful pages.

Your Channel operates in similar fashion to big brother Ceefax and Oracle when they are broadcast on non-adapted teletext sets, with a pre-selection of pages cycling on display.

The technique is called In-vision. In other words the viewer is passive, being unable to pre-select pages for display.

What is very different about Your Channel is that it is the first community teletext service, almost like a local newspaper on television. Every day it pumps out local news and gossip, community events and local advertising with pages being displayed for an average 30 seconds.

The project is one of a number of experimental developments undertaken by New Information Services, a part of BT which incidentally also publishes software under the Firebird name, and has been delving into piping computer games along cable with a Spectrum as the receiving terminal.

Your Channel's advantages, apart from the localised nature, are that cable subscribers could become drowned in the usual cable offering of films, pop music and light entertainment and will welcome a text based, easy-to-read service.

In-vision controller Geoff Bush told *TeleLink:* "We have had an extremely good reaction from our audience and it has been excellent experience for us.

"We started out with some preconceived ideas, some of which have already been proven to be false and have been dropped and we are discovering new methods of presenting information and different types of content all the time".

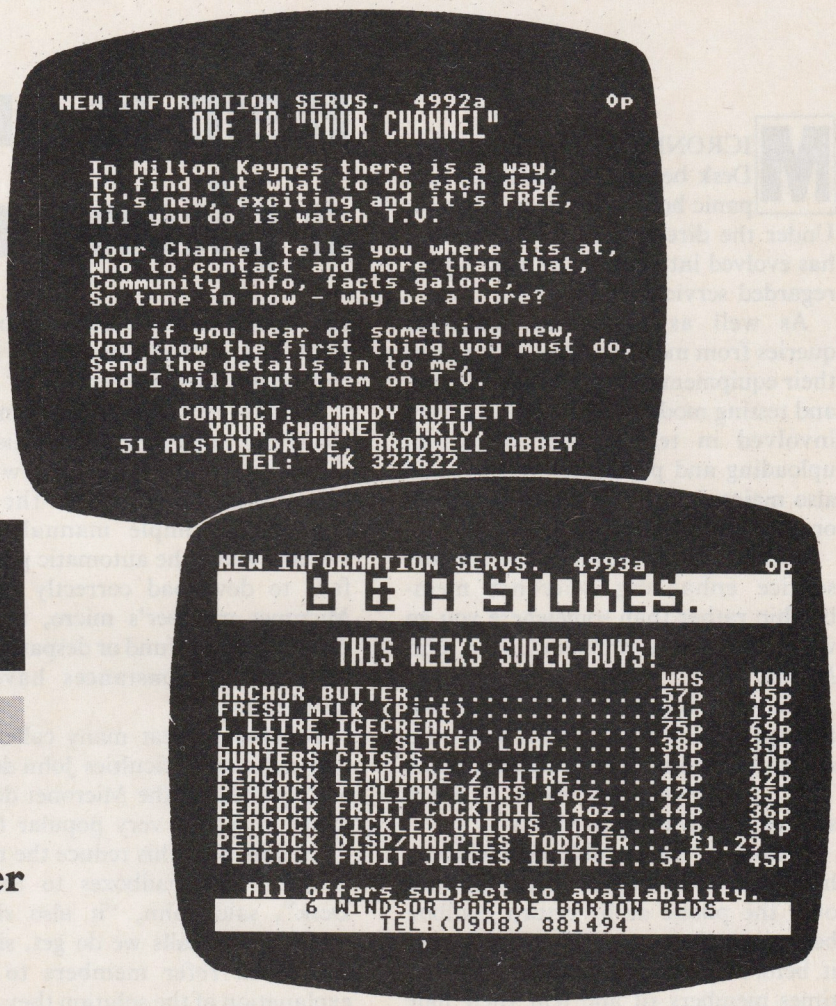
One service which was an instant hit at Christmas was greeting messages. Your Channel was flooded with requests and the BBC and other editing terminals went on overdrive to cope with the demand.

The transmitting equipment holds the equivalent of around 750 pages of text. Programming, just as with television and radio stations, is planned in advance. "We have very flexible and powerful software so that we can insert and delete pages from a particular cycle of pages at will", said Geoff. "For example, if a big news story is breaking locally it can be flashed on the screens immediately".

The S100-based hardware is currently run with floppy discs but the "station" is moving over to hard disc soon. The BBC Micro is used either as a terminal to the S100 or as a

Your Channel

Cable service gives Milton Keynes its own TV newspaper reports Robin Wilkinson



stand alone editor. It is used sometimes to prepare pages, have them bulk-uploaded to Prestel – have a look at page 499 – and then bulk retrieved by the S100 at a later date.

Prestel has been investigating how it can transmit information already stored on its telephone-based viewdata service to cable-based text services. The national news service provided, for example, by the Birmingham Post and Mail on Prestel under the name of Viewtel 202, could be replicated on any number of cabletext services if required.

At Milton Keynes cable subscribers pay for a basic package of films and entertainment, with Your Channel included as a "must have" service. Additionally they can subscribe to the so called premium services such as sport and recently-released films.

The text channel is funded from advertising, and Geoff reports: "We have people coming in every day who are keen to try the service – and they are definitely getting results".

Such is the flexibility of teletext that the team of reporters can amend pages instantly and the segment of scrolling screens can be adjusted to suit the time of day or circumstances.

So is cabletext the beginning of the end for printed local newspapers? "We are complementary to local newspapers at the moment", said Geoff. "We obviously cannot broadcast pages and pages of background information on stories, but eventually I would see us as competition for advertising revenue".

Videotext, the broad term for viewdata and teletext technologies, is proving to be a very flexible electronic publishing format. In the Your Channel environment information is broadcast along a full television channel accompanied by background music. The pages can in fact be copied from a viewdata or teletext system onto video tape or into computer memory store and played in an endless cycle.

The teletext format of 40 characters across and 24 lines in depth was carefully researched in the early days of Prestel as a suitable display medium on standard TV sets – more characters per page were thought to introduce legibility problems.

In-vision systems have been operating in the United States for some time, but rather than displaying full screen teletext some services show one or more lines of text scrolling from across the screen superimposed on broadcast programmes. At Milton Keynes the Your Channel equipment does in fact provide a sub-titles service to accompany programmes when required.

Future developments in the UK involve a number of enhancements including photo-videotext (see feature on Page 46) which will be highly attractive to advertisers and viewers alike.

And when interactive cable systems are introduced there are far reaching applications, teleshopping from home being one of the most explosive.

● *Thorn EMI has been operating its own In-vision system in Swindon for two years but it does not contain such a high degree of community information.*

Help is only a phone call away

MICRONET'S Technical Help Desk began two years ago as a panic hotline for new members. Under the direction of John Mason it has evolved into one of the most highly regarded services on the 'Net.

As well as answering technical queries from members about Micronet, their equipment, downloading software and testing modems, the THD staff are involved in telesoftware filtration, uploading and pre-release testing, and also maintaining a technical help area on the Micronet database.

"We like to see ourselves as a support service enhancing Micronet membership rather than somewhere you go when you have a problem", says John Mason.

Micronet members can choose from a range of approved terminal hardware and software to suit their needs and the THD provides a technical support service for all these products.

"Most of the problems members have can be solved in a few minutes over the phone or by return mailbox because we have probably come across it before", says John Mason. "Sometimes members sit and tear their hair out for days or weeks before phoning us with their problem. They should contact us immediately".

It would be naive to expect a national electronic delivery machanism for micro software to run without occasional hiccups, so the THD operates a simple manual backup system. When the automatic procedure fails to download correctly into any Micronet member's micro, the THD can arrange a refund or despatch a copy once the circumstances have been investigated.

Because a great many callers have had common difficulties John designed a Help area on the Micronet database which is now a very popular feature. "Not only does this reduce the number of calls and mailboxes to the Help Desk", said John, "it also shortens many of the calls we do get, since we can often refer members to a full explanation of the solution they require on the Help area".

Those who for whatever reason can't get onto Micronet to look at the Help area can phone a 24 hour answering service and leave a message to be contacted the next day about their problem.

Any equipment supplied by Micronet can be returned, if faulty, for immediate replacement. "We don't get many returns", said John, "at least three out of every five modems returned aren't faulty at all. We like to have a chat with anyone who thinks their modem is on the blink before they send it off because it's usually something simple".

For every 12 programs that are submitted to Micronet only one gets through to being published on the database. At least half the programs are rejected after an initial technical assessment by the THD, the remainder going on to be validated externally.

Chatting up the celebrities...

CELEBRITY Chatline will be a new service available to Micronetters from the middle of March. Following the success of Micronet's Chatline – a CB type service but on screen instead of broadcast – Micronet decided to take live "chatting" one step further.

Since the summer Chatline has been available to users operating most weekday evenings and weekends. Micronetters complete special message frames that are automatically collected and printed publicly on the system. The average waiting time for a message to become public is about 60 seconds.

This Chatline service will be continuing as usual, but Wednesday nights will be very special.

Micronet's editor, David Babsky, and Claire "PR" Walker will travel to the homes of selected celebrities, editing terminal under-arm, and will give live interviews over the Chatline pages.

A full list of the celebrities to be interviewed and the dates involved will be published on the database in due course so that Micronetters can prepare questions and suggestions, some of which will be sent in the day before the interview so as to kick off prompt at 7pm with some good juicy statements.

This will be a first for nationwide live interviews. Never before has it been so cheap and convenient for the public to send in questions.

The interviews will last for one hour and the total cost of watching the interview develop and sending in your questions is 40p an hour. That is the charge for a local, cheap rate phone call and compares favourably with the possibility of phoning a question into a national radio station or television studio.

For most of the population that would mean a middle or long distance call – and most likely holding on the line for quite a while as well.

Micronet will be inviting for interview personalities from all sections of the micro industry and any famous micro users. They will also have a request frame for people to suggest interviewees, and they say that within reason will do all in their power to persuade them to take part.

Logging on in Wogga Wogga

What would Australia's cultural attaché Les Patterson (alias Barry Humphries) make of Australian Viatel?

IT would seem that the Aussies aren't just a bunch of Foster's lager-slurping, wind-breaking, Sheila-chasing sports-as Les Patterson – Australia's cultural attaché courtesy of Barry Humphries – would have us believe. After all, they are just about to launch their own national teletext service in an attempt to rival Prestel. So from Wogga Wogga to Woomera they'll be starting log on any day now.

The Australian Viatel system, announced last summer, was first muted when the Australian Federal Government ruled in 1981 that any such service belonged properly to private enterprise.

However the Hawke government reversed this view in 1983 and Australia's Telecom moved quickly to enter the field.

The Viatel service is established using Prestel software with Viatel's own amendments and additions running on a battery of GEC 4100 series minicomputers.

The £2 million contract was won by GEC, basing their proposals on the Prestel software, in the face of competition from just about every other computer manufacturer – minis and mainframes – trying to enter the market.

In fact winning this contract was seen as a valuable vote of confidence in the GEC/Prestel combination since most of the non-European world had been watching carefully which way Australia would swing. Many national PTTs are expected to take their lead from Viatel's move.

Prices for Telecom's Viatel services are apparently well below the rates expected by the industry in Australia. Significant first year discounts are also being offered to attract current videotex users to join Viatel.

"We believe that rates must be set at a low level initially to encourage rapid growth in the industry – the best way to achieve profitability in the long term for service providers", said Dr Laurie Mackechnie, Telecom's general manager of commercial services.

Rates for service providers are also much less than expected. "By doing this, Telecom expects that service providers will recruit users to the service and, in fact, the service provider's annual fee is reduced for each user recruited to Viatel", said Dr Mackechnie.

The rates for Viatel users are an annual subscription of $12.50* for the first year of service then $12.50 a month for business users and $2.50 a month for non-business users. Connection costs 8 cents a minute from 8am to 6pm Monday to Friday and 5 cents a minute at all other times.

Australia-wide access to Viatel costs only a local call fee including access to gateway facilities. Viatel service providers have the option to charge for frames used by users but it is expected that most frames on the service will be free.

Costs to service providers are a basic charge of $225 a month allowing for 50 free frames. Additional frames cost 40 cents a month, dropping to 20 cents per frame per month when one reaches five thousand frames or more.

Telecom is also offering a restricted option package to supply up to 50 frames of information for only $80 a month, a move expected to prove popular with small organisations and those wishing to assess the marketing opportunities which Viatel can provide.

Obviously Viatel is looking for a swift uptake of interest in its electronic information services by setting prices at levels somewhat lower than those applying overseas.

"Viatel will also have a gateway facility similar to that operating in Europe", continued Dr Mackechnie. "They provide the opportunity of giving users access to a range of external computers which can provide transactional services of special information.

"Among these are booking and confirming tickets for travel and entertainment, home shopping, home banking, access to airline guides, etc". By charging only $300 a month for gateway, Telecom expects the range of services available through Viatel to expand rapidly.

There have been suggestions in Australia that Telecom would charge as much as $1,000 a month for every information source plus a dollar a page per month storage fee. Obviously the charges which have now been announced set the prophets of doom asunder and suggests that the Australians want Viatel to be as applicable to the small organisation as to the large and to private individuals as to business users.

Australia's telecommunications services generally are highly regarded in the communications world and many observers will be watching to see how this policy pays off in the first half of 1985.

In Britain British Telecom's initial attempt to coax home users into an information system ran into trouble, but in the years since then the world has changed and the average person's familiarity with micro technology both at home and at work is obviously one of the factors which has lead the Australians to follow the policy they have chosen.

* *The Australian dollar is worth £1.35.*

TELELINK has been concentrating on national and international communication networks, but in this and subsequent issues we will also focus on the now fast developing micro computer-based local area and wide area networks – known as LANs and WANs.

Like everything else in communications, the area of LANs and WANs focusses heavily on standards, and particularly the inter-connection of a local network to a wide area or national network.

LANs have been available for several years and like other areas of the micro industry have suffered from product announcements that could not be substantiated.

In particular, while the necessary hardware has always been available, the software for networked workstations and personal computers often did not live up to the glossy brochures.

In the coming months we will be taking a hard look at LANs and discussing how they will gradually merge into the on-line as well as off-line information terminals.

LAN

The growing force in today's business communications

IN the early years of LANs people became very confused with the exact definition of what a LAN really was, and now it has become even more confusing with the converging nature of communications and computing.

Put simply, LANs can be described as having these features.

- The ability for every terminal or device on the network to be able to communicate with each other.
- Contained within a small area, usually a self-contained building or site.
- Resources like printers and disc drives are shared.
- The amount of raw data transmitted, say to a host mini or mainframe, is high.
- Errors of data transmission are low – both in theory and often in practice.

Many vendors homed in on the saving resources element and a high priority was to examine the average cost of each connected work station or node.

In recent years a large number have been installed for a wide variety of applications ranging from distributed data processing to information retrieval, and by the early '80s things were looking brighter as early confusion over standards began to dissipate.

Certain standards were adopted and the most widely used type of network was based on Ethernet which used coaxial cable as the link within a building with modems and boosters along the wires to keep the data whizzing round.

However with the advent of more powerful personal computers with lower cost disc storage and the new generation of PABX telephone exchanges capable of handling both voice and data, many organisations are implementing both LANs and WANs in their "information centre" concept.

And it is significant that in recent months IBM have announced a new communications division and said they will base their products and strategy around the office or building switchboard.

Most early networks were described as baseband systems, which meant they could only handle one transmission at a time. The more modern broadband approach means that a network can carry several hundred simultaneous transmissions whether voice or data, video or facsimile.

These networks use techniques similar to radio frequency channels so RF modems are required to interface digital devices to the network. The same networks in a large organisation with several office blocks on one site can also be used for security monitoring and personal paging.

Micro-based LANs have grown rapidly, and with the inherrent communication capabilities in most micros companies are examining how the workstation can communicate both internally and externally, either connecting to remote sites of the same organisation or remote information retrieval systems and electronic mail and telex.

The in-word now with LANs and WANs is gateways – in other words allowing the terminals to connect to each other both internally and to the world outside.

However the evolution of the digital exchange being brought on stream by BT may mean that the LANs as they were once known will be outgunned by the increased voice/data possibilities of the most modern PABX switchboards.

The Apricot Point 32 links up to 32 workstations

ELECTRONIC MAIL

INTERNAL electronic mail is playing an increasingly important part in the minds of local area network companies.

Digital Microsystems, manufacturers of HiNet, one of the most widely used systems of its kind, has recently announced a enhanced version of the HiNet electronic mail package.

It is able to play host to a wide variety of multi-user, multi-tasking micros and has its own 16 bit workstation called the DMS816.

The HiNet LAN can be connected via plug-in adapter cards to the Apricot, IBM and several IBM compatible machines like the Olivetti M24, Compaq, Phillips P3100 and Ericsson.

More than 60 PCs and workstations can be interconnected to share central data files and peripherals. Emulators are available for ICL, IBM and Sperry mainframes.

The LAN can also be connected to the outside world, plumbing into the telex network and PSS based services.

Swing towards networks

THIS year's Which Computer Show demonstrated a marked swing towards networks and both local and wide area systems were announced by major companies.

ACT was among the leading contenders and networking was a natural area for the company to exploit. It has already announced communications software for its range of PCs and portables branded as Communique and at the show announced network options which are now available.

Describing them as advanced multi-screen systems, ACT unveiled the Point 7 multi-user and Point 32 network systems.

The Apricot Point 7 allows up to seven Apricot, Sirius or IBM PCs to be used as terminals attached to a central filestore. The Point 32 supports a local area network implemented using Microsoft networking software.

It enables up to 32 workstations to be linked together over a distance of 2,000 feet. Personal computers in an Apricot Point 32 network are physically linked via Omninet cards. Apricot Point 32 is the first system in the world to be shipped with Microsoft Networks.

"With the Apricot Point 7 and Point 32 now shipping, we can fully exploit the compatibility of the Apricot range", said Brian Androlia, managing director of ACT.

"We have provided users with a very realistic upgrade path, right the way from a single entry-level business micro to a full multi-user or networked system. No other manufacturer can provide such a comprehensive range of products while retaining software compatibility at all levels.

"We can also offer competitive products outside the micro market place where we have been so successful. Apricot now offers a very realistic

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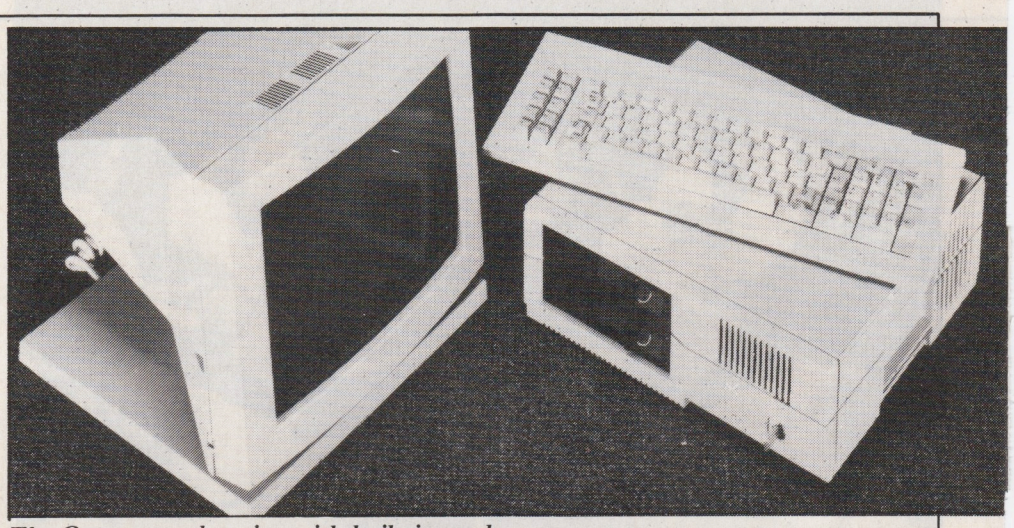
alternative to the minicomputer and in some cases even mainframe systems".

A major advantage of both the Point 7 and Point 32 is their versatility. The terminals, being personal computers with powerful processing and storage capabilities in their own right, can either use these resources or access the extra capacity of the central system, in the case of the Apricot Point 7, or of the network as a whole in the case of the Point 32.

The Apricot Point 7 system box includes 512k of RAM, a 10 mbyte Winchester disc and a double-sided 3.5in floppy disc providing an additional 720k of back-up storage. The Point 32, which is available with 10 or 20 mbyte Winchesters, acts as a file server to the network of personal computers, managing not only the flow of data, but also common printers and the Apricot bank – an archiving system providing 1200 or 200 mbytes of tape storage.

The Apricot Point 7 cluster, priced at less than £7,000 for a four-user system, is said to be ideal for small growing businesses or departments within large companies. The Apricot Point 32 on the other hand is aimed primarily at larger offices or corporate buyers, and has a price for a typical 10-user system of approximately £20,000.



The Comart workstation with built-in modem

ACTION WORKSTATIONS

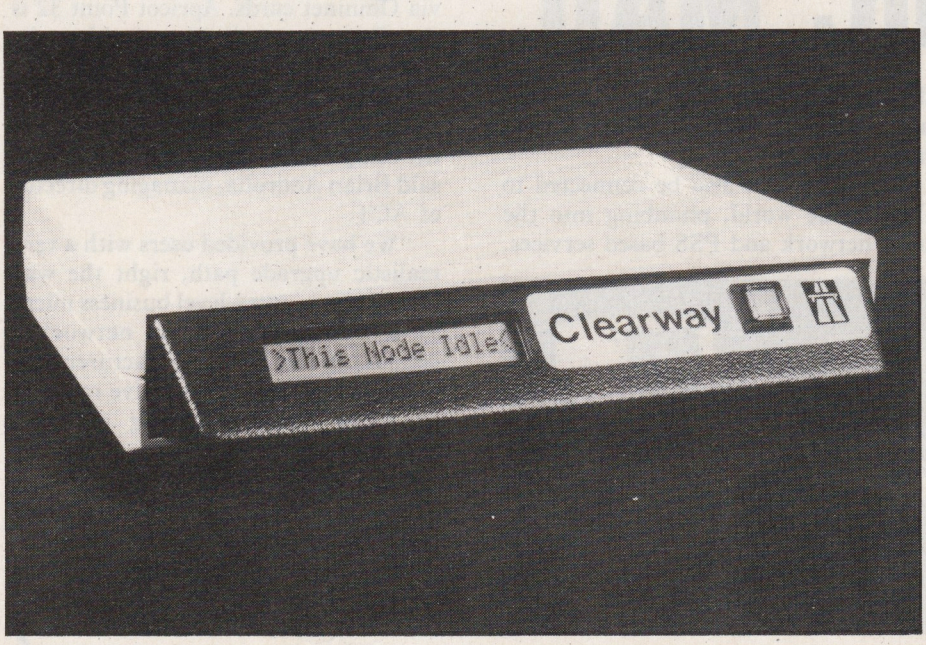
THE new Workstation introduced by Comart Computers is designed to offer a full range of business computing facilities, together with built-in local area networking power which can support up to 255 users. It is fully compatible with IBM PC applications software.

The Workstation, which uses the Intel 286 processor, was designed to match a major trend emerging in business computing requirements – the need for a full range of business computer facilities integrated with wider, more powerful communications and networking capabilities.

Equipped as standard with built-in network interface, modem and ports for serial and parallel printers, any Workstation user can plug into a network by means of a simple connection, up to the maximum number of 255 devices, with no interruption or loss of performance.

Standard features include Concurrent DOS with windowing, GSX graphics, and complete IBM PC DOS software compatibility. MS-DOS is optional.

Keeping it all under control...



LOCAL area networks are all very well in theory but attaching devices like PCs, printers and terminals from different manufacturers often causes headaches.

Some data communication companies have come up with network controller boxes which have simple interfaces and also give network users status reports on what is actually going on.

One such is a table top model known as Clearway Mark II from Real Time Developments. It costs around £200 per network node and contains a Z80 chip.

Clearway uses standard RS232 interfaces and a packet switched ring transmission medium with the network able to handle 99 different devices over 800 metres of cable.

See Micronet 800 in action!

AVON

Bath. Boots, 1 Marchants Passage, Southgate. Tel: 0225 64402.
Bristol. Avon Computer Rentals, 16 West Street, Old Market. Tel: 0272 550600.
Bristol. Boots, 59 Broadmead. Tel: 0272 293631.
Bristol. Laskys, 16-20 Penn Street. Tel: 0272 20421.
Keynsham Key Computer Systems 42b High Street. Tel: 02756 5575.
Weston-super-Mare. K & K Computers, 32 Alfred Street. Tel: 0934 419324.

BEDFORDSHIRE

Bedford. Boots, The Harpur Centre, Harpur Street. Tel: 0234 56231.
Dunstable. Dormans, 7-11 Broad Walk. Tel: 0582 38302.
Leighton Buzzard. Datasine, 59 North Street. Tel: 0525 374200.
Leighton Buzzard. Milton Keynes Music & Computers, 17 Bridge Street. Tel: 0525 382504.
Luton. Hobbyte, Unit 16, The Arndale Centre. Tel: 0582 457195.
Luton. Laskys, 190-192 Arndale Centre. Tel: 0582 38302.
Luton. Terry More, 49 George Street. Tel: 0582 23391.

BERKSHIRE

Slough. Laskys, 75 Queensmere Centre. Tel: 0753 78269.
Slough. MV Games, 245 High Street. Tel: 75 21594.

BUCKINGHAMSHIRE

Bletchley. RAMS Computer Centre, 117 Queensway. Tel: 0908 647744.
Chesham. Reed Photo & Computers, 113 High Street. Tel: 0494 783373.

CAMBRIDGESHIRE

Cambridge. Boots, 65-67 Sidney Street and 28 Petty Curry Street. Tel: 0223 350213
Cambridge. Cambridge Computer Store, 4 Emmanuel Street. Tel: 0223 358264
Cambridge. Heffers Stationers. 19 Sidney Street. Tel: 0223 358241.
Peterborough. Boots, 40-42 Bridge Street, Queensgate. Tel: 0733 65352.

CHESHIRE

Chester. Boots, 47-55 Foregate Street. Tel: 0244 28421
Chester. Computer Link, 21 St. Werburgh Street. Tel: 0244 316516.
Crewe. Midshires Computer Centre, 68-78 Nantwich Road. Tel: 0270 211086
Ellesmere Port. RFR TV & Audio, 1 Pooltown Road, Whitby. Tel: 051-356 4150.
Hyde. C Tech Computers, 184 Market Street. Tel: 061-366 8223.
Macclesfield. Camera Computer Centre, 118 Mill Street. 0625 27468
Macclesfield. Computer Centre, 68 Chestergate. Tel: 0625 618827.
Marple. Marple Computer Centre, 30-32 Market Street. Tel: 061-427 4328
Stockport. National Micro Centres, 36 St Petersgate. Tel: 061-429 8080
Stockport. Stockport Micro Centre, 4-6 Brown Street. Tel: 061-477 0248.
Widnes. Computer City, 78 Victoria Road. Tel: 051-420 3333.
Wilmslow. Wilmslow Micro Centre. 62 Grove Street. Tel: 0625 530890.

CLEVELAND

Middlesbrough. Boots, 88-90 Linthorpe Road, The Cleveland Centre. Tel: 0642 249616.

CUMBRIA

Kendal. The Kendal Computer Centre, Stramongate. Tel: 0539 22559.
Penrith. Penrith Communications, 14 Castlegate. Tel: 0768 67146.
Whitehaven. P D Hendren, 15 King Street. Tel: 0946 2063.
Workington. Technology Store, 12 Finkle Street. Tel: 0900 66972.

DERBYSHIRE

Alfreton. Gordon Harwood, 67-71 High Street. Tel: 0733 836781.
Chesterfield. Boots, 35-37 Low Pavement, Market Place. Tel: 0246 203591.
Chesterfield. Computer Stores, 14 Stephenson Place. Tel: 0246 208802.
Derby. Boots, 1 Devonshire Walk. Tel: 0322 45886.

DEVON

Exeter. Boots, 251 High Street, Tel: 0392 32244.

DEVON

Exeter. Open Channel, Central Station, Queen Street. Tel: 0392 218187.
Paignton. Computer Systems Ltd, 35 Hyde Road. Tel: 0803 524284.
Plymouth. Syntax, 76 Cornwall Street. Tel: 0752 28705.
Seaton. Curtis Computer Services, Seaton Computer Shop, 51c Harbour Road. Tel: 0297 22347.
Tiverton. Actron Microcomputers, 37 Bampton Street. Tel: 0884 252854.

DORSET

Bournemouth. Brook Computers, 370 Charminster Road. Tel: 0202 533054.
Bournemouth. Lansdowne Computer Centre, 1 Lansdowne Crescent, Lansdowne. Tel: 0202 20165.
Dorchester. The Paper Shop, Kings Road. Tel: 0305 64564.
Poole. Lansdowne Computer Centre, 14 Arndale Centre. Tel: 0202 670901.

ESSEX

Basildon. Basildon Software Centre, 78-80 Liberty Shopping Hall, East Square. Tel: 0268 27922.
Chelmsford. Maxton Hayman, 5 Broomfield Road. Tel: 0245 354595
Chelmsford. Way In Computers, 7 Village Square, Chelmer Village. Tel: 0245 467858.
Colchester. Boots, 5-6 Lion Walk. Tel: 0206 577303.
Grays. H. Reynolds, 28a Southend Road. Tel: 0375 31641.
Harlow. Harlow Computer Centre, 17 Staple Tye. Tel: 0279 22846.
Harlow. Laskys, 19 The Harvey Centre. Tel: 0279 443495.
Hornchurch. Comptel Computer Systems, 112a North Street. Tel: 0402 446741.
Ilford. Boots, 177-185 High Road. Tel: 01-553 2116.
Romford. Software Plus, 72 North Street. Tel: 70 65271.
Southend-on-Sea. Computerama, 88 London Road. Tel: 0702 335443.
Southend-on-Sea. Computer Centre, 336 London Road. Tel: 0702 337161.
Southend-on-Sea. Estuary Personal Computers, 318 Chartwell North, Victoria Circus Shopping Centre. Tel: 0702 614131.

GLOUCESTER

Cheltenham. Laskys, 206 High Street. Tel: 0242 570282.
Cheltenham. Screen Scene, 144 St. Georges Road. Tel: 0242 528979.
Gloucester. Boots, 38-46 Eastgate Street. Tel: 0452 423501.

HAMPSHIRE

Basingstoke. Fishers, 2-3 Market Place. Tel: 0256 22079.
Southampton. Business Electronics, Micromagic At Atkins, 7 Civic Centre Road. Tel: 0703 25903.
Waterlooville. GB Microland, 7 Queens Parade, London Road. Tel: 0705 259911.

HERTFORD

Hitchin. County Computers, 13 Bucklesbury. Tel: 0462 36757.
Potters Bar. the Computer Shop, 107 High Street. Tel: 0707 44417.
Stevenage. DJ Computers, 11 Town Square. Tel: 0438 65501.
Watford. Laskys, 18 Charter Place. Tel: 0923 31905.
Watford. SRS Microsystems, 94 The Parade, High Street. Tel: 0923 26602.
Watford. Watford Electronics, Cardiff Road. Tel: 0923 405588.
Welwyn Garden City. DJ Computers, 40 Fretherne Road. Tel: 96 28444.

HUMBERSIDE

Beverley. Computing World, 10 Swabys Yard, Dyer Lane. Tel: 0482 881831.

KENT

Ashford. DGH, 10 North Street. Tel: 0233 32597.
Ashford. Geerings of Ashford, 80 High Street. Tel: 0233 33366.
Bexleyheath. Laskys, 15-16 Broadway Shopping Centre. Tel: 01-301 3478.
Bromley. Boots, 148-154 High Street. Tel: 01-460 6688.
Bromley. Computers Today. 31 Market Square. Tel: 01-290 5652.
Bromley. Walters Computers, Army & Navy, 64 High Street. Tel: 01-460 9991.
Chatham. Boots, 30-34 Wilmott Square, Pentagon Centre. Tel: 0634 405471.

KENT

Gravesend. Gravesend Home Computers, 39 The Terrace. Tel: 0474 23871.
Gillingham. Regal Software Supplies, 49 High Street. Tel: 0634 579634.
Maidstone. Kent Micros, 51 Union Street. Tel: 0622 52784.
Rainham. Microway Computers, 39 High Street. Tel: 0634 376702.
Sevenoaks. Ernest Fielder Computers, Dorset Street. Tel: 0732 456800.
Shortlands. The Village House of Computers, 87 Beckenham Lane. Tel: 01-460 7122.
Sittingbourne. Computer Plus, 65 High Street. Tel: 0795 25677.
Tunbridge Wells. Modata Computer Centre, 28-30 St. Johns Road. Tel: 0892 41555.

LANCASHIRE

Blackburn. Tempo Computers, 9 Railway Road. Tel: 0254 691333.
Blackpool. Blackpool Computer Store, 179 Church Street. Tel: 0253 20239.
Burnley. IMO Business Systems, 39-43 Standish Street. Tel: 0282 54299.
Preston. 4Mat Computing, 67 Friargate. tel: 0772 561952.
Preston. Laskys, 1-4 Guildhall Arcade. Tel: 0772 24558.
Wigan. Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.

LEICESTERSHIRE

Leicester. Boots, 30-36 Gallowtree Gate. Tel: 0533 21641.
Market Harborough. Harborough Home Computers, 7 Church Street. Tel: 0858 63056.

LONDON

W1. Computers of Wigmore Street, 104 Wigmore Street. Tel: 01 486 0373.
W1. HMV, 363 Oxford Street. Tel: 01-629 1240.
W1. Laskys, 42 Tottenham Court Road. Tel: 01-636 0845.
W1. Lion House, 227 Tottenham Court Road. Tel: 01-637 1601.
W1. Sonic Foto Micro Center, 256 Tottenham Court Road. Tel: 01-580 5826.
W1. Tomorrows World Today, 27 Oxford Street. Tel: 01-439 7799.
W1. Walters Computers, DH Evans, Oxford Street. Tel: 01-629 8800.
WC1. Transam Micro Systems, 59-61 Theobalds Road. Tel: 01-405 5240.
W8. Walters Computers, Barkers, Kensington High Street. Tel: 01-937 5432.
SE7. Vic Oddens Micros, 5 London Bridge Walk. Tel: 01-403 1988.
SE9. Square Deal, 373-375 Footscray Road, New Eltham. Tel: 01-859 1516.
Lewisham. Laskys, 164 High Street. Tel: 01-852 1375.
SE15. Castlehurst Ltd, 152 Rye Lane, Peckham. Tel: 01-639 2205.
EC2. Devron Computer centre, 155 Moorgate. tel: 01-638 3339.
N14. Logic Sales, 19 The Bourne, The Broadway, Southgate. Tel: 01-882 4942.
N22. Boots, 38-40 High Road, Wood Green. Tel: 01-881 0101.
NW3. Maycraft Micros, 58 Rosslyn Hill, Hampstead. Tel: 01-431 1300.
NW4. Davinci Computer Store, 112 Brent Street, Hendon. Tel: 01-202 2272.
NW7. Computers Inc, 86 Golders Green. Tel: 01- 209 0401.
NW10. Technomatic, 17 Burnley Road, Wembley. Tel: 01-208 1177.

MANCHESTER

Bolton. Computer World UK Ltd, 208 Chorley Old Road. Tel: 0204 494304.
Manchester. Boots, 32 Market Street. Tel: 061-832 6533.
Manchester. Laskys, 12-14 St. Marys Gate. Tel: 061-833 0268.
Manchester. Mighty Micro, Sherwood Centre, 268 Wilmslow Road, Fallowfield. Tel: 061-224 8117.
Manchester. NSC Computer Shops, 29 Hanging Ditch. Tel: 061-832 2269.
Manchester. Walters Computers, Kendal Milne, Deansgate. Tel: 061-832 3414.
Oldham. Home & Business Computers, 54 Yorkshire Street. Tel: 061-633 1608.
Swinton. Mr Micro, 69 Partington Lane. Tel: 061-728 2282.

MERSEYSIDE

Heswall. Thornguard Computer Systems, 46 Pensby Road. Tel: 051-342 7516.
Liverpool. Hargreaves, 31-37 Warbreck Moor, Walton. Tel: 051-525 1782.
Liverpool. Laskys, Dale Street. Tel: 051-236 3298.
St. Helens. Microman Computers, Rainford Industrial Estate, Mill Lane Rainford. Tel: 0744 885242.
Southport. Central Studios, 38 Eastbank Street. Tel: 0704 31881.

MIDDLESEX

Enfield. Laskys, 44-48 Palace Garden Shopping Centre. Tel: 01-363 6627.
Harrow. Camera Arts, 42 St. Anns Road. Tel: 01-427 5469.
Harrow. Harrow Micro, 24 Springfield Road. Tel: 01-427 0098.
Hounslow. Boots, 193-199 High Street. Tel: 01-570 0156.
Southall. Twillstar Computers Ltd, 7 Regina Road. Tel: 01-574 5271.
Teddington. Andrews, Broad Street. Tel: 01-997 4716.
Twickenham. Twickenham Computer Centre, 72 Heath Road. Tel: 01-892 7896.
Uxbridge. JKL Computers, 7 Windsor Street. Tel: 0895 51815.

NORFOLK

Norwich. Adams, 125-129 King Street. Tel: 0603 22129.

NOTTINGHAMSHIRE

Sutton in Ashfield. HN & L Fisher, 87 Outram Street. Tel: 0623 54734.

OXFORDSHIRE

Abingdon. Ivor Fields Computers, 21 Stern Street. tel: 0235 21207.
Banbury. Computer Plus, 2 Church lane. Tel; 0295 55890.
Oxford. Absolute Sound & Video, 19 Old High Street, Headington. Tel: 0865 65661.
Oxford. Science Studio, 7 Little Clarendon Street. Tel: 0865 54022.

SCOTLAND

Aberdeen. Boots, 133-141 Union Street. Tel: 0224 585349.
Edinburgh. Boots, 101-103 Princes Street. Tel: 031-225 8331.
Edinburgh. Laskys, 4 St. James Centre. Tel: 031-556 1864.
Glasgow. Boots, 200 Sauchiehall Street. Tel; 041-332 1925.
Glasgow. Boots, Union Street and Argyle Street. Tel; 041-248 7387.
Glasgow. Tom Dixon Cameras, 15-17 Queen Street. Tel: 041-204 0826.

SHROPSHIRE

Shrewsbury. Clairmont Enterprises, Hills Lane. Tel: 3647 52949.
Shrewsbury. Computerama, 13 Castlegate. Tel: 0743 60528.
Telford. Computer Village Ltd, 2/3 Hazeldine House, Central Square. Tel: 0952 506771.
Telford. Telford Electronics, 38 Mall 4. Tel: 0952 504911.

STAFFORDSHIRE

Newcastle-under-Lyme. Computer Cabin, 24 The Parade, Silverdale. Tel: 0782 636911.
Stafford. Computerama, 59 Foregate Street. Tel: 0785 41899.
Stoke-on-Trent. Computerama, 11 Market Square Arcade, Hanley. Tel: 0782 268524.

SUFFOLK

Bury St. Edmunds. Boots, 11-13 Cornhill. Tel: 0284 701516.
Bury St. Edmunds. The Computer Centre, 1-3 Garland Street. Tel: 0284 705503.
Ipswich. Brainwave Micros, 24 Crown Street. Tel: 047 350965.

SURREY

Bagshot. P & H Electronics, 22-24 Guildford Road. Tel: 0276 73078.
Croydon. Laskys, 77-81 North End. Tel: 01-681 8443.
Croydon. The Vision Store, 53-59 High Street. Tel: 01-686 6362.
Croydon. The Vision Store, 96-98 North End. Tel: 01-681 7539.
Epsom. The Micro Workshop, 12 Station Approach. Tel: 0372 721533.
Guildford. Walters Computers, Army & Navy, 105-111 High Street. Tel: 0483 68171.
Wallington. Surrey Micro Systems, 53 Woodcote Road. Tel: 01-647 5636.
Woking. Harpers, 71-73 Commercial Way. Tel: 0486 225657.

SUSSEX

Bexhill-on-Sea. Computerware, 22 St. Leonards Road. Tel: 0424 223340.
Brighton. Boots, 129 North Street. Tel: 0273 27088.
Brighton. Gamer, 71 East Street. Tel: 0273 728681.
Brighton. Laskys, 151-152 Western Road. Tel: 0273 725625.
Crawley. Gatwick Computers, 62 The Boulevard. Tel: 0293 37842.
Crawley. Laskys, 6-8 Queensway. Tel: 0293 544622.
Eastbourne. Boots, 15 Eastbourne Arndale Centre. Tel:

TYNE & WEAR

Gateshead. DP Supplies, St. Andrews House, Westfield Terrace. Tel: 0632 785068.
Newcastle-upon-Tyne. Boots, Eldon Square. Tel: 0632 329844.
Newcastle-upon-Tyne. RE Computing, 12 Jesmond Road. Tel: 0632 815580.

WALES

Aberdare. Inkey Computer Services, 70 Mill Street, The Square, Trecynon. Tel: 0685 881828.
Aberystwyth. Aberdata at Galloways, 23 Pier Street. Tel: 0970 615522.
Cardiff. Boots, 26 Queens Street & 105 Frederick Street. Tel: 0222 31291.
Cardiff. P & P Computers. 41 The Hayes. Tel; 0222 26666.
Swansea. Boots, 17 St. Marys Arcade, The Quadrant Shopping Centre. Tel: 0792 43461.

WARWICKSHIRE

Coventry. Impulse Computer World, 60 Hertford Street Precinct. Tel: 0203 553701.
Coventry. JBC Micro Services, 200 Earlsdon Avenue, North Earlsdon. Tel: 0203 73813.
Coventry. Laskys, Lower Precinct. Tel: 0203 27712.
Leamington Spa. IC Computers, 43 Russell Street. Tel: 0926 36244.
Leamington Spa. Leamington Hobby Centre, 121 Regent Street. Tel: 0926 29211.
Nuneaton. Micro City, 1a Queens Road. Tel: 0203 382049.
Rugby. O.E.M., 9-11 Regent Street. Tel: 0788 70522.

WEST MIDLANDS

Birmingham. Boots, City Centre House, 16-17 New Street. Tel: 021-643 7582.
Birmingham. Laskys, 19-21 Corporation Street. Tel: 021-632 6303.
Dudley. Central Computers, 35 Churchill Precinct. Tel: 0384 238169.
Stourbridge. Walters Computer Systems. 12 Hagley Road. Tel: 0384 370811.
Walsall. New Horizon, 1 Goodall Street. Tel: 0922 24821.
West Bromwich. DS Peakman, 7 Queens Square. Tel: 021-525 7910.
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WANT A DATA NETWORK?

You already have one – it's called a telephone

By Stuart Crowther

WITH the euphoria it is creating, anyone would think that data communications in the electronic office is a brand new subject to be tackled by esoteric solutions unknown to humble office managers. The best solution to communications in the electronic office is the network which is already familiar to us all – the PABX telephone system.

Let's set the office scene straight. Really, there are two data communications needs. One is the transfer of bulk data between databases, between computers or from devoted constant-use input terminals (order input etc) and here the LAN comes into its own. That constant data flow can proceed along devoted channels uninterrupted by other forms of communication.

Great. But for the electronic office the new need created is for data communications between people and the systems now available to them for the extraction of, input to, and manipulation of information. These are the people who once had to rely upon a weekly computer printout. Now they use their keyboards to get the same information faster and in its latest version.

All manner of people in an organisation who used to have to ask the data processing manager to run them a report to get at computer information – and inevitably had to take their turn in his queue – now want instant access to information on terminals on their desk.

To make the various data processing units available to office people it makes sense to use the network which already exists in every office – the telephone. Most communications to and from such terminals are short lived – a file enquiry, simple update, electronic mailbox message, etc – and are sporadic.

A sales clerk, for example, may be dealing with customers on the phone and needs to know the stock position of a given product. He needs to know quickly, a problem dealt with in the past by giving every such clerk a duplication of the stock record itself, creating stock level inconsistencies.

To get at the information now he uses his computer terminal. But he does not need to be connected to the computer on a permanent basis – his need for information occurs only once every three or four minutes, perhaps even longer intervals.

It is more economic to key the computer via the PABX and set up an enquiry connection, obtain the information, update it if appropriate and clear down. This data traffic is much more like telephone traffic than traditional DP operations.

This, of course, presupposes that a digital PABX system is in use in the office. If it is of older design, and according to our research there is a more than 70 per cent chance that it is, then the efficiency to be obtained from better speech communications alone will justify its replacement.

Some technical facts and figures. To the digital PABX itself, speech and data calls are no different. Channel speed through the switch – I must quote our own SLX figures here as state-of-the-art examples – is 64k per second.

Data is transmitted from an extension terminal to an intelligent data connector (IDC) on the extension at selectable speeds from 300 bits per second to 19.2k per second. Error rate is very low – in the order of 1 in 10^7. From the IDC, transmission to the PABX itself is in burst mode at 256k per second.

The IDC operates in half or full duplex mode and selects the correct channel speeds automatically, including the dual-rate 1200/75 bps videotext speeds. Data calls are set up and answered from the terminal keyboard.

The IDC provides the usual CCITT V24 (RS 232C) interface which explains its present range of transmission speeds. There are moves afoot to establish direct 64k per second interfaces for X21 terminals allowing faster transmission of data. Other moves include direct interfacing for 2mbytes per second LANs to form a PABX link in which a

* *Stuart Crowther is telecommunications general manager, GEC Reliance Systems.*

transparent path is established.

The switched path from terminal, through extension, PABX, recipient extension and terminal is also code transparent, which allows the use of almost any data protocol to be transported. Communications processors allow a compatibility between X25 and Ethernet.

In networks that are not completely digital the exchange provides a "modem pool". On data calls over analogue lines a modem of the correct speed can be inserted from the pool automatically without special attention by the user. The pooling arrangement means that maximum use can be made of expensive modems, and that analogue lines are used for either voice or data as required.

Connections between two pieces of data equipment need not be initiated every time a link is required. Our SLX, for example, can provide "permanently" switched paths. These are established within the software and can be altered readily by the system administrator.

Data "calls" enjoy a repertoire of facilitites now fairly well known among electronic PABX users. They include automatic call-back from engaged extensions when free (effectively "queuing" a data call without effort on the part of the user), hunted calls to a free computer port or terminal in any given group, security access barriers to data ports from which sensitive information is available – and so on.

Facilities like these help ensure fast connection and keep the actual length of the connection short, two important ingredients of successful data communications operations. The progress of the connection is displayed on the terminal's screen in plain English.

So where does that leave us? The inference from all this is obvious – that to separate speech and data communications at a time when both are becoming available in an every widening scope of facilities is nonsense.

Duplication of equipment and cabling would be the least of the problems. More likely would be the gradual lack of coordination of network design between the two, the lack of flexibility as office layouts changed in line with the systems in use, company growth and the general inability to use the combined speech/data terminals now beginning to appear on the market.

Clearly communications cannot be considered any longer in two categories, and the PABX, in its modern digital form, is set to take over the general office role, allowing the LAN to devote itself to the specialised inter-computer and very high bulk data type traffic.

Reliance systems for the automated office – Datacom, in the foreground, provides speech and data communications. The speech featurephone and the data terminal in the background all link via the new designs in PABX technology.

'If the dragon hadn't got me I'd have died laughing...'

... says CLIFF McKNIGHT about one of the latest games available to Prestel games fans

THE snow was thick on the ground as I sat huddled in front of my monitor. The green screen seemed to glow warmly as the fog swirled at the dark windows.

A disembodied voice rang in my head ... "Take a look at Club 403". No, it wasn't a voice from the dead, it was the editor's phone call. "I've been trying to get you for ages – your phone's been permanently engaged", he said. "I'm not surprised – I've been playing the games on Club 403", I replied with glee. "I'll send you the phone bill later".

In fact, I'd just been sent in search of eye lotion by a rather nasty acid-spraying dragon. Apparently I was lucky it wasn't the fire-breathing kind. All in the line of duty, of course. I'd been playing Crumbling Crags ***(*403980),*** an adventure game from TSR which doesn't have any frame charges.

I'm more accustomed to the micro versions where you can try a variety of responses – Get Sword, Nuke Frog, that sort of thing. Prestel being what it is, such free-form responding isn't really feasible. The solution is to use a multiple-choice format. Do you want to: (1) fight (2) run (3) tell the dragon a knock-knock joke?

Within this format, TSR has produced a very funny game – if the dragon hadn't got me I'd have died laughing.

I'd only managed to get on to Crumbling Crags after putting the kids to bed because they'd been clamouring to try the educational games.

Club 403 has been running an ambitious education project, part of which has involved developing an "Early Learning" database of educational games for pre-school and primary children.

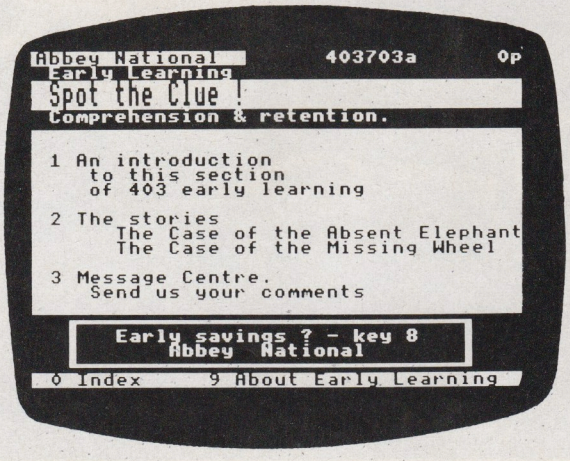
There's not a lot there yet, but what *is* there might be useful if you've got young children. For example, Spot The Clue has two short stories to test comprehension and retention. At several points in the story a multiple choice question is posed regarding the earlier parts of the story.

If the child answers correctly, the story continues. A wrong answer leads to a section of the story being repeated.

There's a four piece jigsaw for pre-school children which aims to test shape recognition. This offers the choice of children and parents playing together, in which case parents are given guidelines on what to discuss with the child, or playing without any help.

We nearly had tears over the Counting Flowers game when asked: "How many yellow flowers are there?" Our Prestel link is via an Apple II micro with green screen monitor, so the question didn't make much sense to our younger daughter.

Fortunately the yellow flowers had another distinguishing characteristic,



so we managed to get through the game even in monochrome.

A fire-fighting game completes the set. In this the concepts of "up", "down" and "next to" are practised by controlling a little man on a ladder.

The games aren't going to have the educational software houses quaking in their boots, but they are reasonable and our kids enjoyed them.

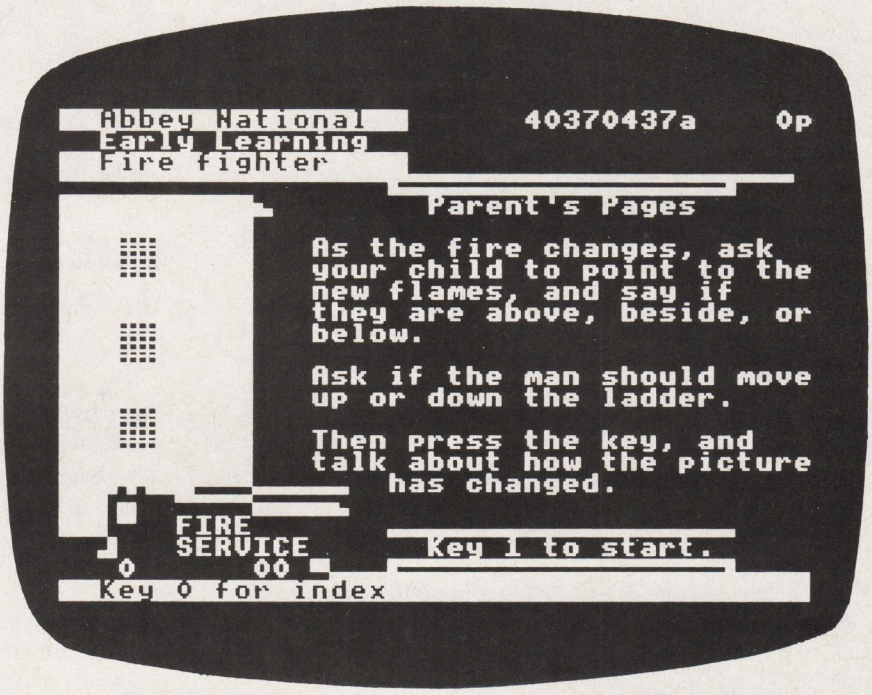
When the database gets established it could form a very useful resource. Also, it would be useful to be able to download the games.

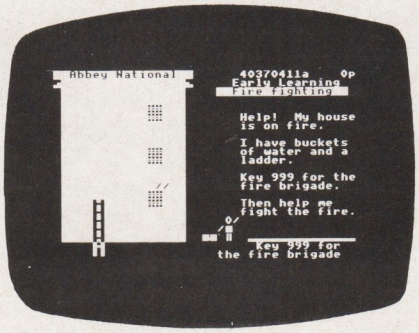
Our kids also got interested in the fact that they were playing on another computer a long way away. I was just waxing lyrical about even parity when the eldest announced that she'd found another game and there was a prize to be won.

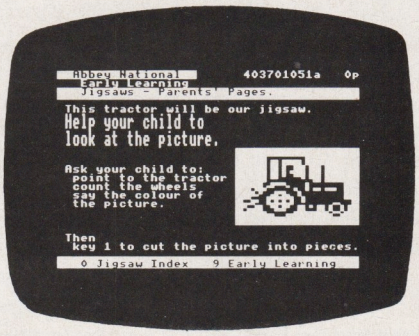
I gave her a fatherly shove and read how to win a poster that glows in the dark. I'm a sucker for posters – especially radioactive ones – but the game turned out to be more appropriate for the kids.

I let the 6-year-old do the game, but if she wins we'll probably come to blows over the poster. She also found a Cinderella game which asked her to make up four-letter words.

Educational games aren't what they used to be, are they?







Bad news for adventurers

PEOPLE who struggle to solve adventure games but can't resist them had better face up to some really bad news.

There's a new game due out this summer that is expected to take *one year* to play and, according to its creators, is "complicated, unpredictable and confusing".

Computer club Infomania and Castle Consulting are working on a multi user network game called Mung which they say is totally different from all previous computer games. Well, it's certainly big. It utilises a 2mbyte main memory with 40mbyte disc backup, two 16 bit processors, 1,000 characters, 400 monsters, 200 magic spells, 400 objects and more than 10,000 map locations.

Up to 50 people will be able to play it simultaneously and Infomania is looking for a start-up membership of 1,000 at a price yet to be fixed, but which *TeleLink* understands will be in the region of £15.

The further players progress in the game the more complicated it will become. Success brings access to new magic and weapons and the opportunity to design personal strongholds and traps for inclusion in the game.

There will be a cash prize for the first person to complete the first scenario, which is expected to take a year to play. Certificates will be awarded to those who reach the rank of Mung mastermind.

In order to play the game you'll need – as well as the brain of an Einstein – a Prestel type modem and standard terminal software.

REVOLUTION ROUND THE CORNER

ROBIN WILKINSON looks at the development of Photo Videotex

IMAGINE sitting at home or in the office with your micro hooked up to a modem and downloading high resolution photographs off the telephone line. It's the type of technological breakthrough which will really revolutionise the way we shop, conduct business and search for information . . . and it is only just around the corner.

In fact the first truly operational system of this type will be appearing out of British Telecom's Martlesham research laboratories any day now based on an IBM PC.

It is called Photo Videotex and has been jointly developed by BT and GEC Computers, who supply Prestel with their current range of network hardware and who also supply private and viewdata systems.

Photo Videotex was first shown at an international conference in 1982, but at that time was really just a product of the technofreaks. The application was real enough, for people have always been looking at ways of sending pictures along the phone line or narrow casting along a small section of cable television channel.

However it was ahead of its time and exhorbitantly expensive to implement for three main reasons:

- The transmitted data required high speed telephone networks.
- The editing terminal to accept digitised images was difficult to use.
- The receiving terminal, capable of handling the storage requirements, was prohibitively expensive.

Two years later most of the problems have been solved, although the terminal, in the case of the IBM being developed by BT, is still very expensive, at an estimated £2,500.

However with the cost of PC memory coming progressively down it should not be too long before a sub-£1,000 micro will be able to cope with pictures down a phone line.

Photo Videotex has been under development by BT's New Information Services Division headed by Dr Ed Williams, who was one of the original team working on the development of Prestel and telesoftware in the late seventies.

Full colour photographs are digitised and stored in a data compressed form with a picture originally taking up to about 76k. With data compression techniques BT software experts have managed to reduce this to an average 20k.

The data is stored in viewdata form as a chain of pages with encoded data, much like the method used to store programs in telesoftware format for Micronet 800. These pages are downloaded into RAM and the character set redefined in hi-res graphics on the terminal's screen.

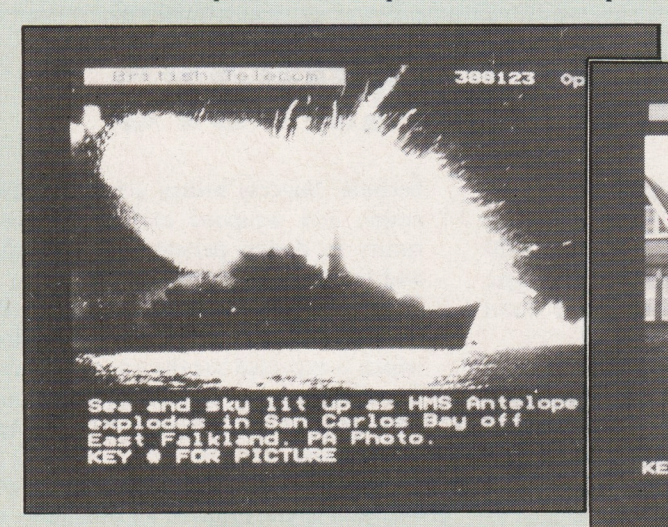
The next problem for BT to crack was the time it took to download the photograph. Early experiments with Picture Prestel were painful, in that you could walk away and make a cup of tea while the picture downloaded and was built up pixel by pixel on the screen.

However BT has introduced a new high speed network operating at 64k connecting a number of major cities in the UK, and that meant a full high definition picture could be downloaded in less than 10 seconds.

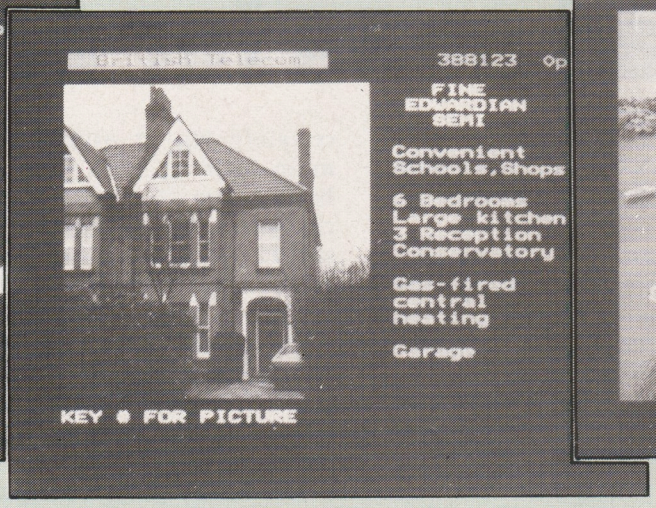
"The converging nature of the technologies have meant that photo videotext is now a viable telephone-based service", said Dr Williams.

Costs are still fairly high at the operator end, the hardware and software required to generate the necessary data coming in at around £15,000, which includes computer, camera, editing suite and modem.

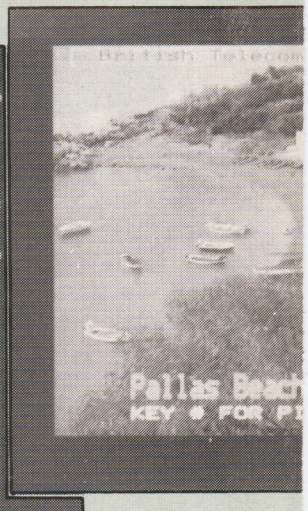
Behind the longer term success will be the implementation of BT's Integrated Services Digital Network and the reduction in price of digitised storage mediums – television



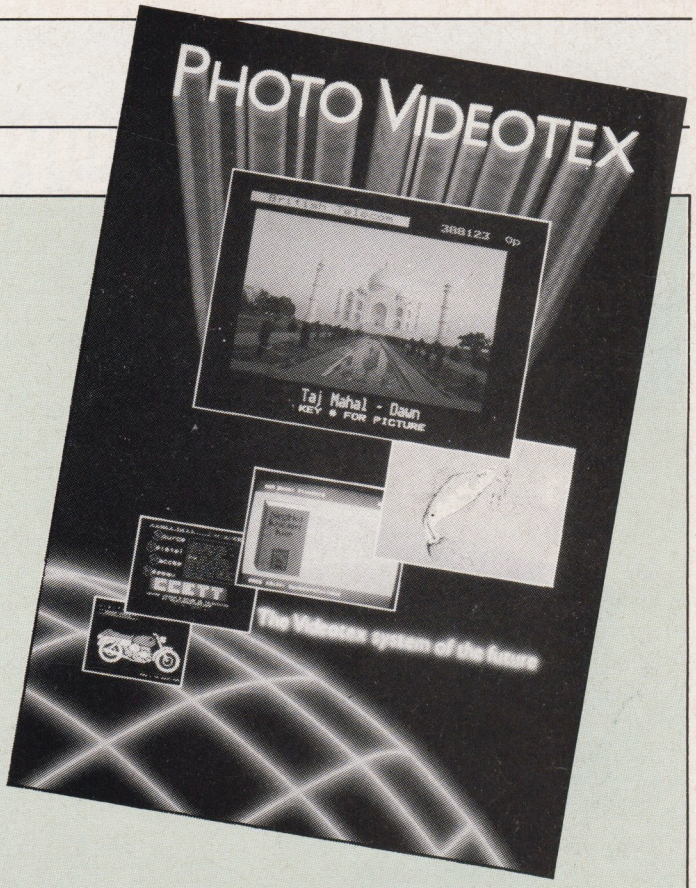
News transmissions: Photos can be flashed directly to picture editors and to people in their homes



House selling: Estate agents or home buyers can browse through



Travel agency of hotels and shown on the



manufacturers like Sony and ITT are already beginning to advertise the first generation digitised television sets.

Applications for phone-based pictures are fairly few at this time because of the costs involved but Dr Williams and his team have identified a number they hope may be early takers. These include photo libraries, auctioneers of high class goods like Sotheby's – *imagine bidding for a Rembrandt that's just been displayed on your PC* – property and security.

Additonally, photo videotex need not be confined to the telephone line, it can be used with broadcast teletext services and cabletext services (see the Your Channel feature on page 26).

The broadcast option is exciting in that at least on a cable system digitised photographs can be mixed in as part of a text page and transmitted to ordinary TV sets along a video channel.

Again the advantages of using data compression techniques are that it requires only a small part of the available bandwidth within, say, a cable channel to be transmitted, thus keeping costs down for cable operating companies.

THE problem with normal photographic images is the size of information content, and therefore the time it takes to transmit.

A picture of high quality can possibly represent something in the order of 1 mbyte of data. In photo videotex systems the image is divided into luminance for the resolution and chrominance for the colour, the values of this information being digitally compressed for data storage.

The speed of downloading a picture over the phone network can be further assisted if the picture itself only represents a portion of the screenful of information.

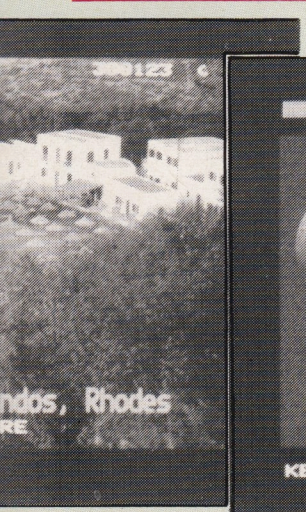
BT experts predict that photographs which take up say one sixth of the Prestel screen – a house advertisement with text and picture, for example, can be transmitted in 15 seconds over a 4,800 baud link.

Most modems used today in professional environments transmit and receive data at these speeds, so it is not beyond the bounds of possibility that as the cost of single chip modems come down so the variety of transmission speeds can also increase for the same price.

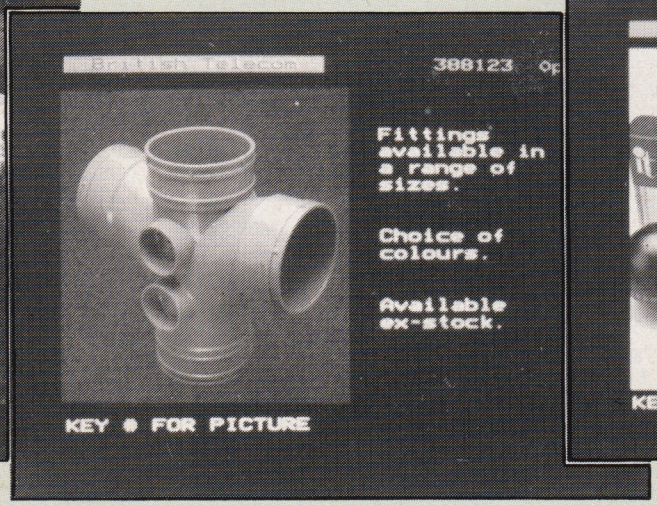
The coding techniques apparently used by BT are DPCM – differential pulse code modulation – and a Hadamard transform, each of which provides data compression at the rate of 2:1.

The Hadamard technique gives a crude foggy build up of the image on screen while in the background the terminal is processing other data like mad. Within a few seconds the full definition picture appears.

Many eminent scientists in this field are predicting that the videotex terminal of the future (my predictions are that the distinction between dedicated viewdata terminals and computers will become blurred) will be capable of displaying a complete electronic version of the printed page and may also then allow those pages to be transmitted user to user via on-board modems.



The latest photos resorts can be screen



Architects and engineers: Can get up to date photos and descriptions

Mail order: The latest offer can be called onto the screen at any time

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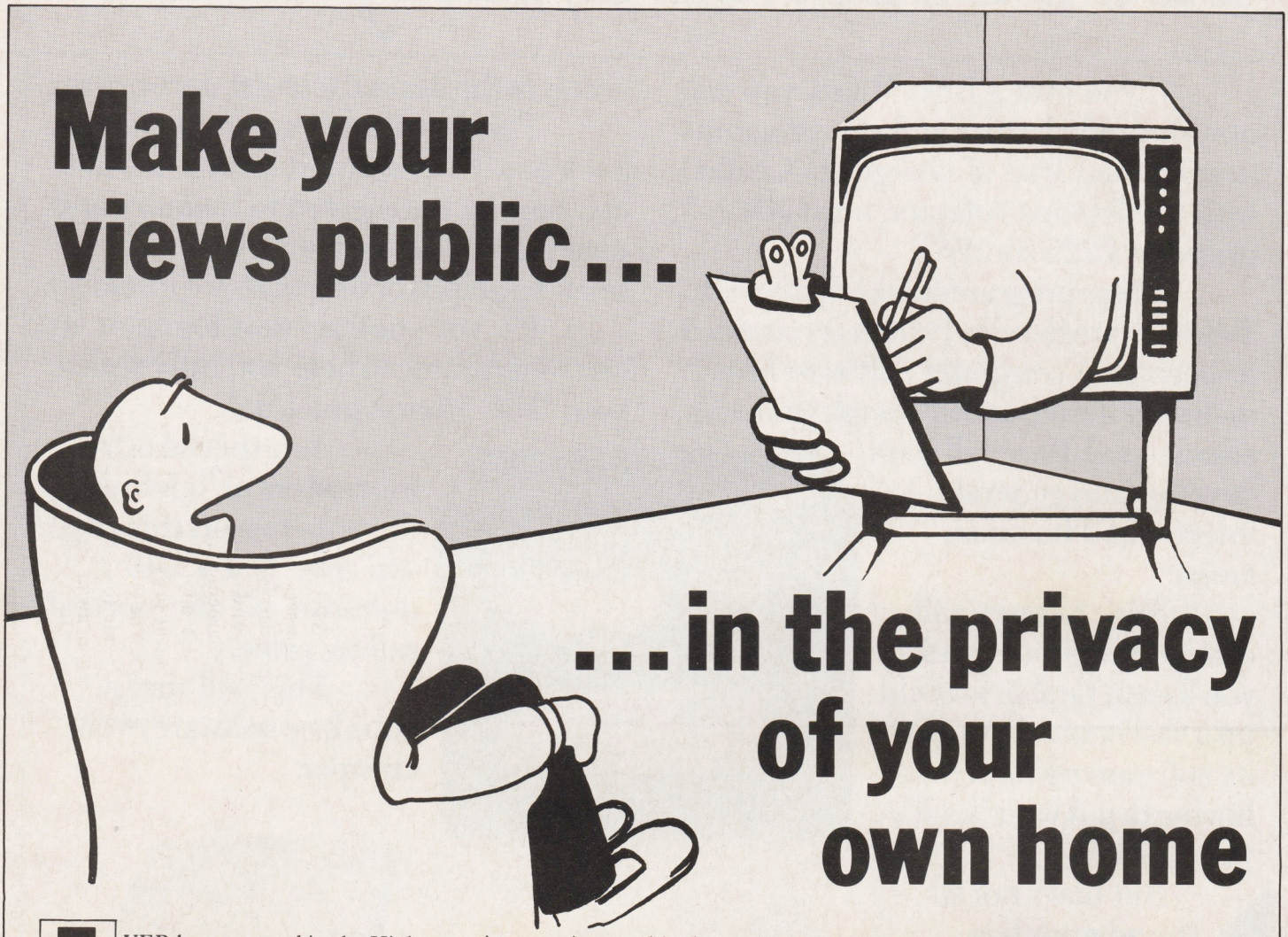

...in the privacy of your own home

EVER been stopped in the High Street by a researcher who starts asking you questions about what you eat, your sleeping habits, even what colour you think would suit your toilet seat best?

Market research in the UK is big business to the tune of around £140 million annually, and it is growing.

It comes in many guises – a knock at the door, a call at night when the bureau knows the main wage earner is in. It can come in the form of a large questionnaire.

Now the on-line business is getting into market research too – using viewdata to pipe questions right into your home. And more than that, it is also experimenting with interactive television.

Leading exponents of this in the UK are AGB Viewdata who have provided the necessary adapters to television sets or modems so that their panels can either vote with their keypads or complete complex questionnaires.

"Market research using traditional means is highly labour intensive with major costs incurred in data collection, coding and data entry. In addition many of the current working methods are slow, laborious and outdated", said managing director John Clemens.

"Viewdata eliminates many of these areas but there still remains the cost of hardware, although in years to come we expect this not to exist".

AGB has now established panels for advertising testing, audience measurement, product testing. It also researches specialist sectors like doctors and solicitors.

"Market reasearch can be analysed and the results made available in hard copy form or on screen the day after an interview", said Clemens. "The respondents also benefit as they are able to complete the questionnaires at a time convenient to them and at their own speed".

AGB looks ahead to the time when interactive services are available in several million UK homes.

"The day will come when penetration of cable is sufficient to enable us to select random samples using electronic mail and to pull in data overnight from random samples of the population", said Clemens.

He cited the example of teleshopping via the small screen.

"It has to be an exciting and enjoyable experience", he said. "To provide teleshopping demands not just the ability to write computer programs, nor just experience in retailing, but also a full knowledge of the psychology of talking to people by screen instead of person to person.

"Computer systems that are called user friendly are often so impersonal and difficult as to be totally off-putting. We can develop systems as friendly as talking to a next-door neighbour.

"Britain is moving towards becoming a screen society. It is difficult to predict the pace at which this will happen, though it is probably faster than the more pessimistic pundits expect".

** If you are interested in taking part in on-line market research, write and let us know and we will pass on your details to AGB.*

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UPDATE 2

TeleLink

Guide to Microcomputing on Prestel

A SPATE of new and changed numbers mean that as a service to readers we are having to include a second update to our Guide to Microcomputing on Prestel, which first appeared as a 24-page supplement to issue No. 1 of *TeleLink*.

The Guide was the first attempt ever made to compile a directory of pages that await the browser through Prestel, and was warmly welcomed by readers.

But new pages are being added all the time, and a regular update has proved to be necessary to keep users fully aware of what is available.

Copies of *TeleLink* No. 1 are still available. See the coupon on Page 61, or write to: *Back Numbers, TeleLink, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.*

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SPECTRUM GAMES

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CommunITel is a winner

COMMUNITEL is an extremely powerful and well put together local and wide area viewdata package for the BBC Micro.

The package was born out of the viewdata work of the instructors and trainees at Britain's first Information Technology centre (ITeC) in London.

Indeed a major factor behind its creation was to enable the 200 or so ITeCs around the country to be linked together by a latticework of micro-Prestel systems in addition to their own area on Prestel. It is now retailed solely by CommunITel Ltd, the fledgling company formed to market the product.

It has been designed for use with an intelligent, auto-answer/auto dial modem made by DaCom systems that has speed switching for fast electronic mailing. The package weighs in at £325.

For that you get a system software disc, sample database disc, modem, tutorial guide, reference manual and all necessary leads.

CommunITel has been designed with maximum flexibility in mind. It can be reconfigured for use on 40/80 track/single/double sided drives. It can be used in conjunction with a variety of printers. Function keys can be programmed and so on.

The software is based on a series of clear, easy to use menus. The main menu features:

- Search local viewdata base
- Editor
- Carousel automatic display
- Print frames
- Local telesoftware formatter
- On-line host
- Viewdata Telesoftware terminal

The search option gives you the chance to view three very complete databases on the demo disc. There's one for the star seekers (astrology), one for the graphics freaks (picture gallery) and one for the studious (training frames).

They are all well put together and will be inspiring to newcomers to the gentle art of database construction. Moving around the local databases has much the same feel as being on line to Prestel – the Return key hashes you onto subsequent frames within a page and * is used to move back a frame.

After a peep at the demos I moved on to the editor to create my own frames. Bearing in mind the limitations of the BBC Micro keyboard compared to a professional viewdata editing terminal I was prepared to be frustrated. This was not the case. The complete range of facilities are there, including some you don't get on the terminals such as tab setting and colour wrap.

The Q, W, A, S, Z, X keys have been commandeered for graphics work, which is made easier by the display of the exact horizontal and vertical position of the cursor on the top command line.

Once created, frames can be routed together by using the page routing facility, letting you specify which other frames can be reached by keying 0 to 9 from this frame. Fortunately plenty of advice on database design is given in the documentation. (Having been privy to Prestel's black book on design I reckon CommunITel's is far better – if less comprehensive.)

You can create a maximum of 95 frames on one side of a disc and 195 on 80 tracks. It's not exactly going to put Prestel's 300,000 frames to shame but, as anyone who has run a database on a regular basis will tell you, it will keep you more than busy.

The most significant aspect of the package is the Host system. To run it you need to create a log-on frame entitled HALLOa to prompt callers for name and phone details, a message frame, a root frame 0a, and a log-off frame.

Callers can leave their mark by accessing your In Tray, which usually will be found on frame 910. It consists of two files which log the caller's name. phone number, host phone number, number of frames sent and the time they logged on and off. All very useful information. Up to 250 callers can be recorded.

To view information about callers you simply Esc to bring down the host and select the Review Callers option. One feature of the system is that when called by another CommunITel user it can receive pre-prepared frames at 120 cps.

When running as Host the screen gives clear details on number of calls received, log-on failures, frames received, space left in In Tray and total frames held. When a caller is on line the screen displays frames being sent to the caller and the caller's response.

The Telesoftware Formatter converts files to the CET telesoftware format. This means that text, data and programs can be sent down the line via the Host. To convert a file you set up a front frame describing the file for the potential caller and then move into the telesoftware formatter option which converts the file onto a database disc in telesoftware format. The telesoftware frames are created back to front so that one line of code is placed on the bottom line of the frame.

With an ever growing number of 1200/75 baud modem users it makes a lot of sense bringing out software to allow a Prestel-style bulletin board to be created.

With the bulk software CommunITel will be rubbing shoulders with packages like the Metrotel Viewdata Software which runs on the Torch computer and retails at £1,700.

If you are curious to see the package in action try phoning one of the trial sites on 01-958-7098. You can also get further on-screen info on Prestel page ***88841023** or have a look at the ITeCs' database on ***482** for the latest information.

I think this package is one of the most exciting things to happen on the micro scene since the Kremlin got hold of a ZX81. Seriously though, if you're interested in running a viewdata base you need your modem tested if you don't give CommunITel the once-over.

Ken Young

Mac greets a great new world

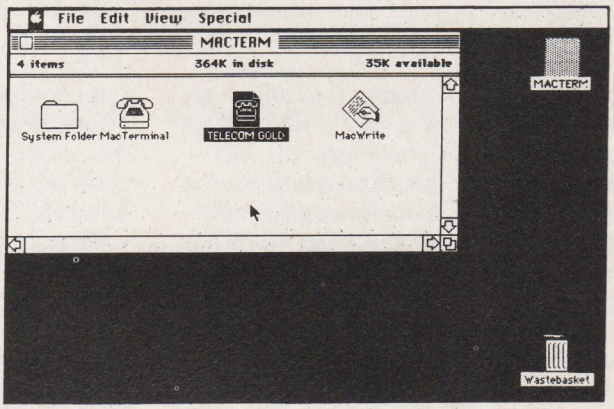
Bill Hill links up with MacTerminal

OWNERS and users of the Apple Macintosh computer have now joined the ranks of communicators with the release of a terminal software package which opens up for the Mac the world of external databases, electronic mail and telex, and gives the machine the ability to talk to other computers.

MacTerminal, which should be on sale by now from Apple dealers at £99, is likely to do for communications what the Mac has already done for most other computer applications.

When Apple launched the Mac, its power and ease of use took the computer world by storm. The new package, developed by Apple itself, combines the same power and ease of use to run the Mac into a system which can talk to anyone, anywhere with the minimum of effort.

I've had a copy of the final release version of MacTerminal for several weeks now, and have been using my Mac in



conjunction with a Miracle Technology WS2000 modem to try it out. The results have confirmed my view that the Macintosh is the best thing to have happened to computing since Apple started it all in that California garage in the 1970s.

MacTerm allows the Mac to emulate VT100, VT52 and TTY terminals. With the addition of a protocol converter it will also emulate IBM327X and ICLC03 terminals for use in a business setting.

One of the biggest problems in setting up communication with any outside system is matching the terminal emulation, baud rates, handshake and all the other parameters which have to be correct before any meaningful dialogue can take place. On the Mac there is a wide range of settings options, and they are all selected with a click on that famous Apple mouse, making the process simplicity itself.

A typical example, and the one which I've used most, is Telecom Gold, BT's electronic mail and telex system. Configuring MacTerm to handle Telecom Gold took about two minutes flat. But the real beauty of the package is that it's only the work of a moment to save a new MacTerm file – which I titled Telecom Gold – which then preserves all the settings.

For those familiar with the Mac and its desk top environment, the Telecom Gold file, or any other file you might want to set up, such as Prestel, subsequently appears on the desk top with its own icon. Selecting Telecom Gold with the mouse means that the Mac thereafter will load up MacTerminal already set for the system. All you have to do for ever after is dial up, sign on and you're away.

Since I was a journalist planning to write a series of articles on Telecom Gold, British Telecom agreed to let me have a free mailbox for a month. During that time I used my Mac and an Apple Lisa to send messages to users in the UK and the USA. In fact I was so impressed with the system that when the free month was up I sent away my subscription and became a paying customer.

Used with Telecom Gold, MacTerminal has some

**Bill Hill is a network columnist on The Scotsman.*

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interesting features which I found invaluable. For example, there is a SEND FILE option which allows you to write a letter or document offline in the Mac's word processor, MacWrite, and save it as a text file.

Once you're in Telecom Gold's MAIL SEND command you simply click on the file menu with the mouse to select SEND FILE.

The Mac then reads the disc – or any other you insert – and tells you which files are available. You click the filename with the mouse, and it's done. The text is then loaded into BTGOLD for you.

Coming the other way, if you are pulling text or other files off Telecom Gold and into your own system, it's possible to print them out while you are still in MacTerm. But the program disc has enough space for you to have a copy of MacWrite on it as well.

If you set up the disc that way it's possible to select the Telecom Gold file either as a MacTerm file or a MacWrite one. If you pick the latter, the text can then be edited and typeset using all the MacWrite features familiar to users.

With Telecom Gold, the real advantages are that it's part of the international ITT Dialcom system – opening up more than 40 countries – and that it makes no difference what system your addressee is running at the other end, since the mainframe system does all the matching for you.

However MacTerminal can also be used to access remote databases, user groups and bulletin boards (I've tried them all successfully) or talk direct to other computer users able to emulate the same terminals.

I wouldn't be without it – or my Mac!

Lockouts could be a problem

THE Telemod 3 modem, one of the top range models from OEL of Penrith, is a multi speed model giving 300/300 and 1200/75 full duplex, in answer or orginate, and 1200/1200 baud half duplex in asynchronous communication mode, plus auto answer.

Housed in a black box that fits under the telephone, it has been designed to plug into a BT type 600 socket. The back panel contains the on/off switch, BT type 600 socket for the phone and the standard DB25 socket for the RS232 connections.

The front panel has one rotary (baud rate select) and two toggle switches, one is line hold (data switch) the other is auto/manual select. The panel has 10 LED indicator lights, the five on the left being Line Hold, Dtr, Ring and Carrier detect, the remainder showing the baud rate status.

A six page manual gives simple instructions to connect the modem and phone and operate the front control switches.

The first test was to try it out on the Prestel system at 1200/75 baud rate. This worked very well. (I must have got a clean line for once. As I live in the only area in the UK that is not owned by British Telecom I have to dial outside to access Prestel.)

Next was to try out the 300/300 baud rate. Every time I try to ring round to other bulletin boards I can never find one free. Is this normal or am I just unlucky?.

Eventually I managed to get logged on to a couple of systems, then I connected the modem to my LNW-80 computer – that's the one that runs Forum-80 Hull – selected auto/ans mode and let you the public try it out.

It was left on line for three days with callers using it from Germany, Sweden and Finland as well as the UK.

The only problem that came up was that when a caller has logged off and the system is recycling, the Forum software sends a Ctrl Break to the modem, which stops it from answering till the computer is ready for the next caller. But twice during the three days the modem failed to reset when the computer was ready for the call. It just kept ringing for the next caller and would not auto answer.

The only way I could reset was to switch the modem off and on again.

Overall this is a well made easy to use modem. Apart from the two lockouts in the auto/ans mode it worked very reliably. The price is £179, slightly higher then some others that have more features but which are not BT approved.

Frederick Brown

Good for 300 baud

MANY modems have come on the market in the last two years, most of them from the USA or UK, but Answercall's MM100/UK bears a Hong Kong label. It comes in a neat cream plastic case 5in × 6in × 1.5in with a brown control panel on top containing one three way switch and two LEDs. A mains adapter is supplied.

On the back is a standard DB25 (RS2232-c) connector which is more standard then some of the Din plugs I have come across, power adapter socket and phone lead with an BT type plug.

Although no manual was supplied it is basically a case of plug in and go. First test was locally on Forum-80 Hull using a BBC Micro to do a bit of maintenance and file transfer on the bulletin board using both answer and originate modes.

Then using the LNW-80, the one Forum-80 runs on, I started to ring round other bulletin boards. I must have picked a bad night as most seemed busy.

After about 15 attempts I found Microweb free, got the tone and switched to originate. After reading a few messages I downloaded two files, one Ascii, the other using Xmodem protocols. No problems with either.

At a price of only £70 the MM100/UK must be a good buy for anyone only wanting 300 baud.

Frederick Brown

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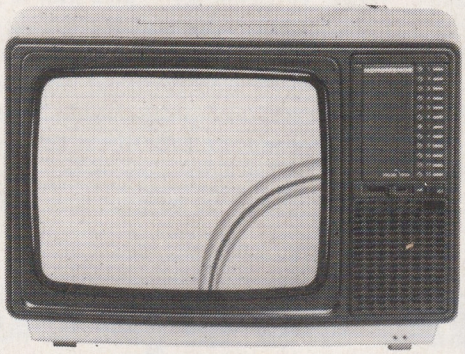

Other Monitors available include:

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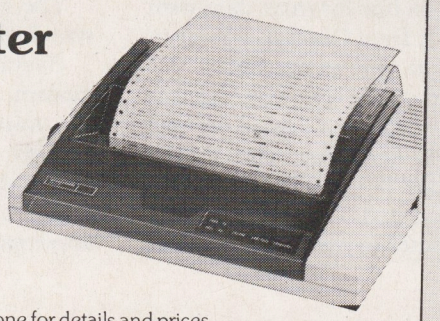

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In tray for IBM PC

SOFTWARE designed to allow IBM PC and Compaq users to handle electronic mail more easily has been launched by Geisco, the international systems and consultancy arm of GE (USA).

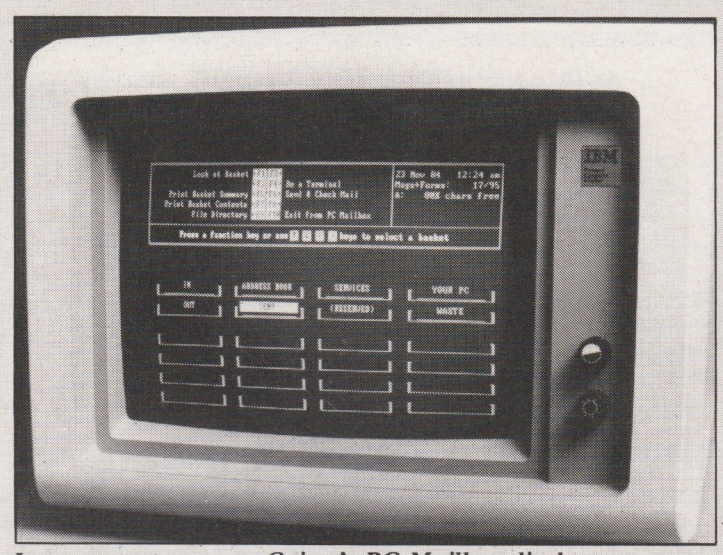
PC Mailbox, which works with Geisco's Quik-Comm international electronic mailbox service, uses the screen to display a symbolic desk top layout, with "baskets" for incoming and outgoing messages and for electronic filing.

Incoming mail is automatically routed to the "in" basket. Function keys identified on the screen allow it to be read, edited, printed or directed to one of the filing baskets.

Addresses for outgoing electronic mail can be assigned to messages direct from an "address book" basket without the need to key them in. A basket is also allocated to personal reminders.

Geisco's Quik-Comm service, for which PC Mailbox acts as an interface, uses a teleprocessing network available in over 30 countries.

● *Geisco, 25-29 High Street, Kingston-upon-Thames, Surrey KT1 1LN. Tel: 01-546 1077.*



In trays, out trays . . . Geisco's PC Mailbox display

Link up for Apples

AM Technology has announced Vicom 1.6, an integrated communications software package for the Apple II family.

It allows Apple owners to use viewdata databases such as Prestel, Homelink and Farmlink in Apple colour as well as allowing them to connect to and use all Ascii databases.

New Ascii functions allow users to send messages and telexes both within the UK and externally via services such as Easylink, Telecom Gold, Comet, one-to-one and bulletin boards.

Vicom works on all standard UK modems as well as on the intelligent auto-dial modems from DaCom, Master Systems, Miracle Technology, Tandata and Thorn-EMI.

It supports a wide range of serial cards including the Apple Super Serial Card, CCS, Miracle, OEL and Pace.

All baud rates required for viewdata and Ascii databases are covered including 75/1200, 1200/75, 300/300 and 1200/1200 baud full duplex.

Vicom for the Apple II costs £75. A model for the Macintosh will be available soon.

● *AM Technology, 19 Kensington Court Mews, London W8 5DR. Tel: 01-937 2810.*

Pick package

TWO companies, Ramdata Systems and Aspect Systems, have combined to develop a general purpose telex interface package to run under the Pick operating system.

Asptel-X is currently running on Aston Technology's Crystal Sabre range of multi-user 68000 based micros interfacing to the telex network via a British Telecom approved device.

The cost, which includes a BT approved interface, costs £2,995.

● *Ramdata Computers, Unit 12, Saffron Way, Saffron Lane, Leicester LE2 6UP. Tel: 0533 838000.*

Protocol converter

THE Connect C03 protocol converter system which enables micros to be linked to an ICL

→

Booster can halve transmission times

INMAC has developed a Modem Superbooster which it says can increase V22 modem transmission speeds by up to 100 per cent giving a considerable saving in telephone charges.

The Superbooster takes asynchronous signals from a peripheral, converts them for transmission at 1200bps in synchronous format through the existing V22 modem and another Superbooster at the receiving end reverses the process.

Because synchronised data does not require start or stop bits for every byte of data, transmission speeds are considerably increased.

In addition, it also compresses the white spaces in data and blocks it into a new format with better compaction and bit utilisation.

The Superbooster is said to have in-built rapid error detection and automatic correction software for a faster response to retransmission requests and there are virtually no acknowledgement delays using the in-built buffers.

Should the recipient not have a Superbooster the transmitting one will automatically detect this and transmit in a normal fashion.

It can be set to various input configurations including 10 bit Ascii and extended Ascii (11 bit Wang).

For security, the data is blocked in a special format during transmission over the public telephone network.

A two channel version is available with a 6k Buffer which uses a multiplexer to encode two transmissions down a single modem channel with no loss of data. This version has intelligent buffer software that adapts the buffer to the individual performance of the peripherals.

● *Inmac UK, Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.*

Modem Superbooster from Inmac

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mainframe has been launched by Metascybe Systems.

Up to 10 micros may be linked via the Connect C03 controller to each C03 protocol port on the mainframe.

Micros may be connected by either a three-wire RS232 interface or via modems. Prices range from £1,950 for a three micro system to £2,950 for a 10 micro system.

● *Metascybe Systems, 78 Long Lane, London EC1A 9ET. Tel: 01-606 6865.*

Maintenance for Sycero

SYSTEM C has announced C-Link, a maintenance contract for users of Sycero, its program generator for 16 bit micros.

The support package, which includes a comprehensive range of services based on British Telecom's BT Gold network, costs £185 for the first year, dropping to £100 for the second.

With it, customers receive a prompt reply to queries and are also given access to C-Board, a regularly-updated notice board listing programmers' hints and solutions to common problems.

Sycero is said to be the first micro product to be supported by electronic mail in this way.

As part of the contract System C provides a modem operating at 300 baud and all necessary software, including a TTY emulator.

The cost also covers the startup charge of subscribing to Telecom Gold. An additional facility is that subscribers will receive free updates to Sycero.

● *System C Ltd. Tel: 0622 55142.*

With City in mind

A MULTI-standard communications terminal to meet the requirements of City institutions has been developed by Bishopsgate Terminals.

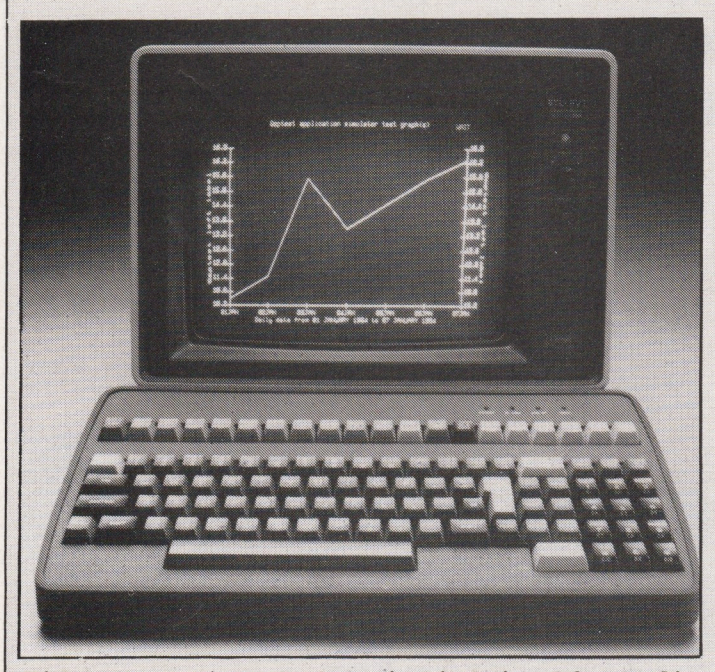
Using colour in all modes, it presents high resolution graphics, viewdata information services and 80 character standard scrolling VDU protocol.

The terminal was developed in response to demand from brokers, banks and dealers for desk systems using a single keyboard and screen.

In addition to the standard qwerty layout the keyboard has 20 function keys to give rapid access to available services.

It normally uses a 12 inch colour display which sits on a plinth containing hardware and software. Alternatively a nine inch colour display can be supplied for desk or wall mounting.

● *Bishopsgate Terminals, Old Brew House, 130 High Street, Old Woking, Surrey GU22 9LD. Tel: 04862 27241.*



Bishopgate multi-standard terminal is designed for the City

Data line monitor

GENERAL Audio and Data Communications, part of the CAE Group, has launched a data line monitor which provides information said to be previously unavailable from a single diagnostic unit.

The Autoscope combines the functions of a standard datascope with those of a performance monitoring system, and provides the network observer with a clear numeric and graphic display.

Other integrated features eliminate the need for programming, protocol expertise and complex data-link operations.

General Audio has also introduced the Teltone simultaneous data and voice transmission system, which provides a high-speed local data network without the need for expensive modems or additional cable runs.

The system uses the existing network of PABX wiring, allowing every telephone extension in an office to transmit data without affecting normal telephone operation.

The simultaneous use of both voice and data communications is also a feature of displayphone, a desk top unit which will also act as a Prestel terminal and provide access to electronic mail systems via an onboard modem.

● *The CAE Group, Akeman Street, Tring, Herts HP23 6AJ. Tel: 0442 82 4011.*

Prestel emulation

AN additional communications package, Addpac, is now available from Tandata Marketing for the BBC Micro.

It is designed for use with the company's existing BBC Micropack Tango, which gives full Prestel emulation.

Addpac provides extra facilities such as the ability to save incoming data from line to disc, print incoming data direct from line rather than from screen in scroll mode with 40/80 columns, utilise word processing capabilities and send data direct from disc.

It comes on cassette but may be transferred to disc or backed up on tape. Price: £25.

● *Tandata Marketing, Albert Road North, Malvern, Worcestershire WR14 2TL. Tel: 06845 68421.*

Network for IBMs

UP to 160 IBM PCs can be interconnected in a local area network by using the AST PC net II card, one of a new range of communications products launched by AST Europe.

The card plugs into an I/O slot in the PC and a twisted pair cable is connected by standard jack to the network trunk cable.

Using PC net II, from 2 to 32 PCs form a network over 500 ft of trunk cable length, but this can be increased to 160 PCs over 2,500 ft by using optional repeater circuitry.

Disc file and record lock out facilities prevent two users from modifying the same information.

A print spooler enables users to queue and gives priorities for the network's shared printers. Full security features control access to shared discs.

The AST PC net II retails at £436 for the standard version. With repeater circuitry the price rises to £524. A starter kit with everything needed to connect two PCs costs £959.

● *AST Europe, Fringe Meadow Road, Centech North Moons Moat, Redditch, Worcs. Tel: 0527 61051.*

Telex on Apricot

TELEX messages can be received and sent using the latest version of the Communique package for the Apricot personal computer.

Offered by ACT Computer Services at £395, Communique incorporates an auto-dial onboard modem and communications software to connect the Apricot to the 12 principal public information services.

Basic charge for sending 200 characters is 12.5p – less than the price of a second class stamp.

● *ACT Computer Services. Tel: 0272 211 733.*

Built-in error correction

A MODEM with an integral error corrector, believed to be first of its type anywhere in the world, has been launched by Concord Data Systems.

Known as the V22bis, it is now being imported by Concord's exclusive UK distributor, the Milton Keynes based DaCom Systems.

The V22bis ARQ is a 2400bps full duplex modem. As well as the integral error corrector, it has optional autodialling facilities.

It is designed for asynchronous traffic which requires error free data transmission, and it also features a powerful automatic adaptive equaliser to provide the best possible performance on marginal lines.

● *DaCom Systems, 26 Heathfield, Stacey Bushes, Milton Keynes MK12 6HR. Tel: 0908 311885.*

Minimo 3/12 modem

TWO models have been added by DN Computer Services to their modem range. Both models act as "four modems in one".

The Minimo 3/12 at £145 offers front panel switch selection of 300, 75/1200 or 1200/75 full duplex operation or 1200/1200 half duplex baud speeds.

The second additional model is the SB 2123 which is the 'commercial' alternative to the Minimo 3/12.

This model also has auto baud and mode selection as standard and costs £230 with options of auto answer, auto disconnect and auto dial/redial.

● *DN Computer Services, Truedata House, Green Lane, Heywood, Manchester OL10 2DY. Tel: 0706 67567.*

Data line monitor

LATEST addition to British Telecom Merlin's range of networking products is Datelnet 500 which provides simultaneous but independent speech and data transmission over existing PABX cabling.

It can support point-to-point and multidrop data networks to permit interworking of computers, work stations, printers and terminals.

Together with Merlin's Datelmux 5500 statistical multiplexers acting as a local data switch, full interlining between terminals and computing resources can be provided.

Two basic types of unit are used – desk and central – to provide these extra data communication channels. The desk units can be wall or desk mounted and simply plug into the new standard telephone sockets. The telephone and data terminal are then linked in by standard interfaces.

The central units are rack-mounted near to the PABX computer. Transmission may be synchronous or asynchronous at data rates up to 19,200 bps with full duplex operation.

Typical application examples are factories or offices where high costs of new cable, or disruption caused by recabling and problems presented by old buildings or rambling sites could make prohibitive the capital risk of installing a proprietary LAN product.

Average cost per extension for a speech and data system with 12 links is under £500, and the modularity of the equipment allows the user to expand as needs arise.

Merlin Datelnet products are available from Telephone Area Sales Offices.

● *British Telecom Merlin. Tel: 0344 56661.*

The Concord V22bis error correcting modem by DaCom Systems

Security minded

AN intelligent modem that incorporates powerful encryption facilities for security has been introduced by Computer and Systems Engineering.

The Executive 440 is a compact, autodial/autoanswer model offering either 1200/75 bps full duplex (Prestel) or 1200/1200 bps half duplex with error correction.

A proprietary method of data compaction ensures that error correction can be applied without any substantial loss of transmission speed.

The security facilities on the Executive 440 are Case designed and it is claimed it would take an expert with detailed knowledge of the design principals several weeks and substantial computer power to crack a single one-way transmission block.

Moreover cracking that one block does not help in cracking

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the next, so deciphering an entire two-way transaction is not a practical commercial proposition.

The system is a two key structure where the secondary keys are generated independently at each end of the link without being transmitted, again ensuring against unauthorised access. Encryption is available in both manual and automatic answering modes.

● *Computer and Systems Engineering, PO Box 254, Caxton Way, Watford Business Park, Watford, Herts WD1 8XH. Tel: 0923-33500. Telex: 923325.*

Videotex emulation

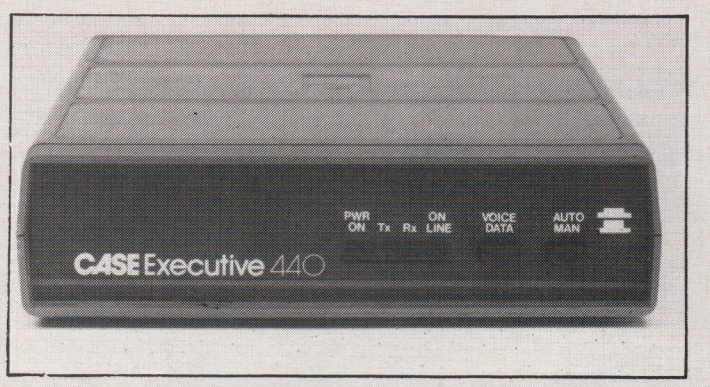
ADDED to the features of LSI Computer's Octopus personal computer range is a videotex emulation. Users needing link-up to Prestel or a private viewdata service can use Octel running under Concurrent CP/M86 in either mono or full colour. The only extra hardware required is the usual V23 modem.

The system can be made available to any Octopus on an Arcnet network, while other work is taking place on the computer to which the Octel videotex emulation is attached.

Both 40 and 80 column videotex emulation is available with no limit to the number of frames of information because they can be stored in videotex or text format on any disc drive in the system.

A fast view facility is provided for on-line page sequencing by single keystrokes and the keyboard supports all information provider editing requirements. Log on to Prestel is automatic and a keyboard overlay mat shows all function-key allocations at a glance.

● *LSI Computers, Copse Road, St. Johns, Woking, Surrey GU21 1ST.*



The Case Executive 440 Modem, nicknamed the "Hacker-cracker" for its built-in scrambling facility

Business system

HASLER has launched a fully integrated business and communication system – the Hasler 2001.

It provides full telex facilities, saves all messages on disc and connects to existing computers in a company.

As a business system, the 2001 performs as a word processor, looks after planning requirements, stores database information and runs many other software packages.

For the price of a conventional telex machine, the 2001 runs full telex and micro facilities concurrently and incorporates the Hasler 1001 baudot character printer providing a hard copy of all telexes sent and received.

● *Hasler (Great Britain) Ltd, Commerce Way, Croydon, Surrey CR0 4XA.*

Comms package

WHAT is claimed to be the only complete BABT approved communications package for the IBM PC, XT, AT, Compaq and compatible micros has been launched by PC Communications.

The Missing Link is an internal modem which comes with a menu driven software package allowing autodial/autoanswer access to private and public viewdata and datel services.

The British-designed 2/3 size card plugs into any of the expansion slots and offers CCITT V.21 300/300 and V.23 1200/75, 75/1200 full duplex with selectable error detection and correction protocols.

● *PC Communications, Business and Technology Centre, Bessemer Drive, Stevenage, Herts. SG1 2DX. Tel: 0438 316561.*

Shorter Portman

A MULTI-standard modem from Interlekt Electronics will be in the shops from April with a £125 price tag.

The modem, called Prospect, is in fact a chopped down version of the company's Portman modem which was recently dropped in price to £173. Main difference in the two is the Prospect will not have the auto-answer facility.

It offers 300/300 full duplex, 1200/75 half duplex for viewdata and 1200/1200 for user to user.

If the design of the Portman casing is anything to go by the Prospect will have a LCD display for line status purposes and a baud rate control knob. The modem is currently going through approval with BABT.

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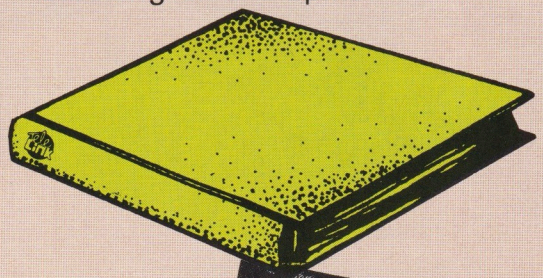
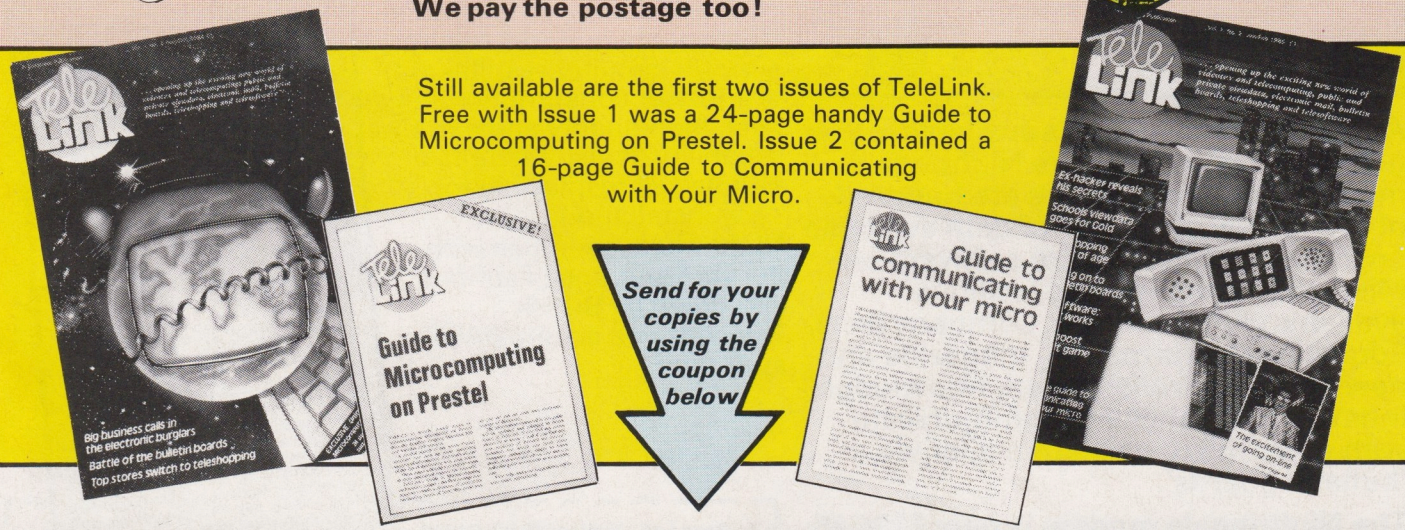


We pay the postage too!

Still available are the first two issues of TeleLink. Free with Issue 1 was a 24-page handy Guide to Microcomputing on Prestel. Issue 2 contained a 16-page Guide to Communicating with Your Micro.



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A world of information is available to you now when you install the Nightingale modem from Pace. There are hundreds of thousands of 'pages' of data available on Prestel, free computer software on Micronet, homebanking facilities available with Homelink, Company facts, Educational information, magazine and news articles available with Knowledge Index and the ability to communicate with other micro users direct, or via 'bulletin boards'.

The Nightingale modem is only £136.85 inc. VAT. If you do not already have suitable communications software Pace can supply this complete with a manual and full installation instructions.

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By far the most versatile modem available, at the price, for either home or business use, Nightingale will enable your micro computer to send and receive data utilising an ordinary P.O. Telephone Line. It offers Prestel/Viewdata baud rates (1200/75 & 75/1200) alongside 300/300 baud full duplex for communication between computers.

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*Assumes IBM micro fitted with RS 232 interface. Please allow up to 28 days delivery.

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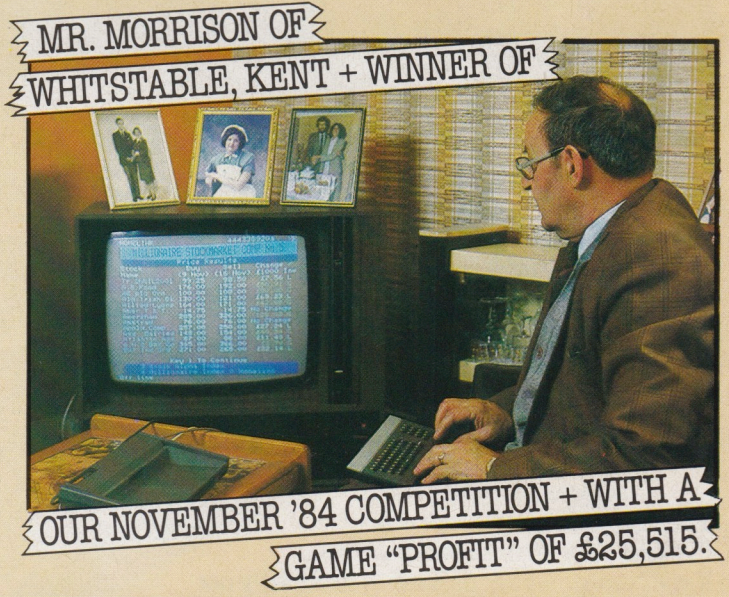

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